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ELGAR

SERVICE MANUAL

for the

GLOBAL UNINTERRUPTIBLE POWER SUPPLY (GUPS)

MODEL GUPS 2400A

THIS SERVICE MANUAL IS INCOMPLETE WITHOUT THE MODEL 2400A OPERATING MANUAL WHICH CONTAINS A DESCRIPTION OF THE SYSTEM, INSTALLATION INSTRUCTIONS, AND OPERATING INSTRUCTIONS.

THIS SERVICE MANUAL CONTAINS THE THEORY OF OPERATION, MAINTENANCE INSTRUCTIONS, PARTS LISTS, SCHEMATICS, AND ASSEMBLY DRAWINGS.

ELGAR CORPORATION
9250 Brown Deer Road
San Diego, CA 92121

Model GUPS 2400A
Service

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January 21, 1994

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SAFETY NOTICE

WARNING

HAZARDOUS VOLTAGES IN EXCESS OF 280 VRMS, 400V PEAK MAY BE PRESENT WHEN COVERS ARE REMOVED. QUALIFIED PERSONNEL MUST USE EXTREME CAUTION WHEN SERVICING THIS EQUIPMENT. CIRCUIT BOARDS, TEST POINTS AND OUTPUT VOLTAGES MAY ALSO BE FLOATING ABOVE (BELOW) CHASSIS GROUND.

Installation and servicing must be performed by QUALIFIED PERSONNEL who are aware of properly dealing with attendant hazards.

Ensure that the ac input power ground is properly connected to the Model GUPS 2400A input connector or chassis. Similarly, other power ground lines including those to application and maintenance equipment MUST be properly grounded for both personnel and equipment safety.

Always ensure that facility ac input power is de-energized prior to connecting or disconnecting the power cable. Similarly, the Model GUPS 2400A circuit breaker must be switched OFF prior to connecting or disconnecting output power.

In normal operation, the operator does not have access to hazardous voltages within the chassis. However, depending on the user's application configuration, **HIGH VOLTAGES HAZARDOUS TO HUMAN SAFETY** may be normally generated on the output terminals. The Customer/User must ensure that the output power lines are properly labeled as to the SAFETY hazards and any that inadvertent contact with hazardous voltages is eliminated.

Guard against risks of electrical shock during open cover checks by NOT TOUCHING any portion of the electrical circuits. Even when power is OFF, capacitors may retain an electrical charge. Use SAFETY GLASSES during open cover checks to avoid personal injury by any sudden component failure.

Always remove the battery module and disconnect the ac input power, and allow **three minutes, minimum**, prior to performing any internal servicing. The battery module weighs 48 lbs. (22 kg); ensure adequate support is provided when removing the module.

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SECTION I

THEORY OF OPERATION

1.1 INTRODUCTION

Topics within this section provide a sound basis for understanding the role performed by the electronics in the instrument and should be a precursor to any troubleshooting or maintenance. It is also recommended that the user frequently refer to the diagrams and schematics contained in Section IV.

The topics of this section are well advanced over normal operator activities. Thus, the user should already be familiar with both analog and digital design, associated devices, and terminology. Details of the inner workings of DC power supplies, power amplifiers, etc., are in the individual device manufacturer's data books.

1.2 INTERCONNECTION DIAGRAMS

The GUPS 2400A consists of eight sections:

- Rectifier PWA (Diagram 5151559);
- Control PWA (Diagram 5151562);
- Inverter Power PWA (Diagram 5151560);
- Processor PWA (Diagram 5151586);
- Battery Charger PWA (Diagram 5151561);
- Display PWA (Diagram 5151592);
- Output Filter PWA (Diagram 5151563); and,
- Output Transformer Assembly (Diagram 5151626).

Detailed operating principles will be provided for those circuits whose operation is not obvious to the repair personnel. Reference designators will correspond to those of the particular assemblies where used. Individual sections of ICs will be identified by an IC designator and the associated output pin (e.g., U6 pin 3 is the section of U6 that has output pin 3). Positive logic conventions are used; signals without a bar are high when true and signals with a bar are low when true.

1.3 CONFIGURATION

The GUPS 2400A is an on–line GUPS that utilizes a dual–conversion configuration to provide an isolated output that is regulated in voltage and frequency. The output is continuously supplied from an inverter; regardless of the condition of the ac input, the output is totally independent of that input.

There are three modes of operation: **Normal**, **Backup**, and **Recharge**:

- In the **Normal** mode of operation, the GUPS 2400A is receiving power from the ac input and the battery is fully charged.
- In the **Backup** mode of operation, the GUPS is receiving power from the internal battery during an outage of the ac input.
- During the **Recharge** mode, the GUPS is receiving power from the ac input and the battery is being recharged.

1.4 AC INPUT CIRCUITRY

Ac input power is connected through J1 to an EMI filter and a transient suppressor network comprising VR1–VR3, FL1, and C5–C7. These stages attenuate high frequency EMI on the ac input and prevent the propagation of EMI generated within the GUPS 2400A back onto the ac input. In addition, the input varistors clamp high voltage transients to safe levels for the internal circuits of the GUPS 2400A. Common–mode and transverse–mode protection is provided. Circuit breaker CB1 provides fault protection; the ac input voltage is routed from CB1 to the Rectifier Printed Wiring Assembly (PWA), A3 and the Control PWA, A1.

1.5 RECTIFIER PWA

(Refer to Diagram 5151559.)

The Rectifier PWA contains the phase–controlled bridge rectifier, the voltage–doubler switch, battery soft–start switch, battery switch, ac line monitor, and the ac line–loss detector. The rectifier is configured to operate as a voltage doubler for ac input voltages in the range of 85 Vac to 140 Vac and as a bridge for ac input voltages from 170 Vac to 280 Vac.

The phase–controlled bridge rectifier comprised of D8 and D9 is used to soft–start the dc bus capacitors (C1 and C2) when the ac input is between 170 Vac and 280 Vac. The phase angle at which the SCRs are turned on is slowly increased from 0° to 180° when the bridge is enabled. Thus, a current surge from the ac input during start–up is prevented. When the ac input voltage is between 85 Vac and 140 Vac, the voltage doubler switch (D12) is turned on; phase control is also used for soft–start.

Transformers T2, T3, transistors Q7, Q8, and associated components, produce an isolated pulse drive at 50 kHz. This pulse drive is enabled with U6 pin 3, U6 pin 4 and the oscillator, U8. U4 pin 4 with Q5 and U4 pin 6 with Q6 enable the soft–start by allowing the voltage on C12 or C22 to discharge from 12VS to ground. U5 pin 14 and U5 pin 13 produce the modulated pulses by comparing a sawtooth wave at pin 9 and pin 11 (synchronized to the ac input frequency) with the voltage across discharging capacitors C12 and C22.

The sawtooth waveform is produced by a current source (U2 pin 7, U2 pin 8, and associated components), charging capacitor C8 (the discharge of C8 is accomplished with transistor Q11). The current source output amplitude is varied with the ac input frequency; therefore, the phase modulation is made independent of ac input frequency. U3 and associated components form a frequency to voltage converter whose output voltage controls the output of the current source. Q1 and U4 pin 2 produce a trigger signal that is synchronized to the ac input frequency.

D19 is a switch for pre–charging the dc bus from the internal battery when the GUPS is started without an ac input. Resistor R60 is used to limit the peak current when the switch is turned on. After a time delay, D18 is turned on, bypassing the soft–start resistor. T4, T5, Q9, Q10 and associated circuitry are the drivers for the SCR switches. The 50 kHz oscillator, U8, is used to produce the high frequency drive.

Sensing of the ac input voltage is accomplished with the isolation transformer, T1. This transformer drives an RMS–to–DC converter, U1. Together with amplifier U2 pin 1, it produces a dc voltage that is proportional to the ac input voltage. This dc voltage is routed to the Processor PWA, A2.

U5 pin 2 is a high speed line–loss detector. This detector is a comparator that compares the rectified and filtered sample of the ac input voltage with a dc reference. The output is a digital signal that is low when the ac input is below the allowed range.

1.6 CONTROL PWA

(Refer to Diagram 5151562.)

The Control PWA contains analog circuitry for the inverter, housekeeping supply, and monitoring circuits for the ac output voltage, ac output current, and the battery voltage.

The housekeeping supply is a current–mode forward converter which generates 5V, 12V, and –12V referenced to the control circuit ground, and 15V/–15V referenced to the primary circuit ground. VR1 is a linear regulator that produces the 5V; VR2 is a linear regulator that produces the –12V.

U17 is the control IC that produces a 100 kHz PWM drive for the converter. The current–mode control operates the converter as a voltage–controlled current source. The power source for the supply is either the ac input or the battery. The ac input is rectified by D13 and D14 on the Control PWA and D9 on the Rectifier PWA; the ac input is then filtered by C48. The battery is switched in with Q1 when the ac input is not available. Q8 switches the high voltage across primary winding 5–6 of T1. The outputs of the isolation transformer, T1, are rectified and then filtered by LC networks.

The peak amplitude of the primary current is controlled by sensing the voltage drop across R86 and feeding it back to U17. The peak value is determined by the voltage error signal produced by the error amplifier of U17. U19 and U18 produces an isolated feedback signal derived from the 12V output. Q6, R80, and C68 produce a soft–start when power is first applied. Q7 and R82 provide a compensating signal that maintains stable operation of the converter when the duty cycle exceeds 50%.

U20 pin 7, U13 pin 3, and associated circuitry produce a digital signal that is high when the ac input is not present. Under this condition and, if the GUPS output has been enabled, Q4, Q2, and Q1 are turned on to connect the battery to the supply input. The battery is switched to prevent discharging it when the GUPS is turned off. Q4, D17, and associated circuitry produce the 12VZ low current power supply for CMOS ICs U13 and U14; the 12VZ supply allows start–up of the housekeeping supply when only the battery is available as a power source.

U14 is a toggle flip–flop that determines whether the output should be on or off; it is driven by U13 pin 11. U13 pin 11 produces a logic high when either the Output On switch is pressed or the LOBATTSD is sent by the microcontroller from the Processor PWA (through U15); a low to high transition toggles U14. The output of U14 is coupled to the microcontroller through isolator U16.

The microcontroller on the Processor PWA produces the reference for the inverter; a sinusoidally modulated pulse train is present at J4 pin 30. U2 pin 2 level shifts the pulse from 5V to 12V. U1 pin 8 and associated circuitry filter the PWM pulse train and produce the sine wave reference.

U1 pin 14 is the error amplifier for the inverter. It compares the reference at pin 12 with the sampled output voltage (isolated with a sensing transformer) at J2 pin 4. The error signal at pin 14 is summed with the dc offset compensating signal at U1 pin 1. D5 and D6 clamp the maximum positive and negative amplitude. U4 pin 1 and U4 pin 7 level shift the error signal in a positive and negative direction, respectively, in order to produce an error "window."

R1 is the burden resistor for the inverter current sense transformer, T2, (located on the inverter transformer, T1). U1 pin 7 amplifies the voltage; the signal is routed to comparators U5 and U6, and to the microcontroller on the Processor PWA as signal IOUTSNSE. U5 pin 7 and U6 pin 7 are comparators that compare the two error signals with a signal that is proportional to the inverter output current. The signal is constrained to be within the error window by the modulation process. Therefore, the inverter output current is controlled in amplitude and waveform. In effect, the inverter operates as a current–mode controlled converter. The pulse duration is dependent on the time interval required for the signal to slew from the lower error voltage to the upper and vice versa. This makes the switching frequency variable, dependent on the slew rate of the inverter current. This would depend on the dc bus voltage and the phase of the output voltage.

U7 pin 3 and U7 pin 4 form a latch that prevents multiple switching during pulse transitions. D7, R30, C32, D8, R31, and C33 produce delays between the turn–off of one drive signal and the turn–on of the other. This prevents simultaneous conduction of a vertical pair of inverter bridge transistors (a condition that could result in failure of the transistors). U7 pin 10 and U7 pin 11 are the gates which enable the inverter drive. U9 pins 2,4,6 and U9 pins 10,12,15 are buffers that supply the necessary current drive for the opto–isolators on the Inverter PWA.

Instantaneous over–current protection of the inverter bridge is accomplished by monitoring the voltage drop of the MOSFET switching transistors, and terminating drive when it becomes excessive. VDS–DET–1 (J4 pin 28) and VDS–DET–2 (J4 pin 26) are opto–isolated digital signals that indicate the voltage level across the MOSFETs; a logic high for high voltage and logic low for low voltage. U2 pin 4 and U2 pin 6 are level shifters that shift from 5V to 12V.

The voltage level across the MOSFETs (whether high or low) is compared with the state of the drive signal for the corresponding inverter bridge switch at U8 pin 4 and U8 pin 10; the two outputs are ORed at U10 pin 3. U10 pin 4, U10 pin 10, U10 pin 11, and associated circuitry form a pulse stretching network that generates a fixed off time whenever an improper high voltage condition is detected across the MOSFET switches. The drive is gated off at U7 pin 10 and U7 pin 11.

The dc offset in the inverter transformer primary is controlled with a separate feedback loop whose error signal is summed with that of the error amplifier that controls the output voltage. U11 pin 1, U11 pin 7, and associated components produce a filtered, scaled, and offset voltage that is dependent on the dc content of the inverter output. U11 pin 8 is a comparator that compares that voltage to a reference at pin 10. The output is a modulated signal that drives U12 through a current source, U11 pin 14. The output is scaled, offset, and summed at U1 pin 1. U22 and associated components produce a regulated 8V supply from the 12VX supply of the Inverter Power PWA. R48 is the adjustment potentiometer for the dc offset.

U3 is used to preset the error amplifier and the dc offset compensating signal when the inverter is disabled. This speeds up the settling time of the feedback loop when the inverter is enabled. U2 pin 10 is a level shifter for the inverter enable signal from the microcontroller on the Processor PWA. U4 pin 8 produces a scaled sample of the inverter output voltage to the microcontroller on the Processor PWA. U20 pin 1, U21, and associated circuitry produce an isolated signal that is proportional to the battery voltage. This signal is coupled to the microcontroller on the Processor PWA.

1.7 INVERTER POWER PWA

(Refer to Diagram 5151560.)

The Inverter Power PWA contains the full bridge converter that generates the 60 Hz ac output voltage of the GUPS 2400A. It operates at a variable switching frequency from approximately 30 kHz to 60 kHz, dependent on the dc bus voltage and the phase angle of the sinusoidal ac output. Its output is a sinusoidally modulated pulse train, switching between plus and minus the dc bus voltage. This pulse train is filtered by a LC filter and then coupled to the output of the GUPS with a shielded isolation transformer, T1. Since the four sections of the bridge are the same, only one section will be described.

Transistors Q9, Q10, Q11, and Q12 are parallel connected to form one of the power switches of the bridge. D6 is the anti-parallel freewheeling diode which allows current to circulate in the reverse direction when the switch is turned off. Diode D5 prevents reverse current from flowing through the internal diodes of the MOSFETs. This prevents excessive reverse recovery loss in the MOSFETs. D25, R19, and C13 form a snubber to control the peak voltage that is developed across D5. D26, C14, and R20 form a clamp to control the peak voltage that is developed across the MOSFETs.

Transistors Q7 and Q8 form a current amplifier to allow fast charge and discharge of the MOSFET capacitance during switching. U4 level shifts the output of U3 from 5V to the 12V, as required, to drive the MOSFETs. U3 provides isolation for the drive signal from the Control PWA; U3 is connected in series with U5 so that the diagonal switches of the bridge are turned on simultaneously.

The lower two quadrants of the bridge have drain–source voltage monitors for the MOSFET power switches. The monitors provide protection for the switches from overcurrent conditions. U10 pin 12, U10 pin 7, and associated circuitry are comparators that compare the scaled drain–source voltage to a reference. Whenever the voltage is higher than the reference, the corresponding opto–isolator, U11 or U12, will be turned off. This will produce a logic high at the output of the opto–isolators. U13 and associated components generates a regulated 5V supply for the comparators.

The two upper quadrants of the bridge have individual power supplies, while the two lower quadrants have a common power supply. U9, Q26, T1, and associated components form a power supply with three isolated outputs. This circuit operates at a frequency of 100 kHz and a fixed duty cycle of approximately 50%. D13 and D14 allow reset of the transformer core. Overcurrent protection is provided by monitoring the current in Q26: R1 is the current sense resistor, and Q25 turns off the drive if the current becomes excessive.

Source 1 of the upper quadrant is also routed to the Control PWA as 12VZ to serve as the power supply for the dc offset compensation circuit.

C7 and C8 are the filter capacitors for the dc bus. C38, C3 and R48 form a damper to control the voltage overshoot that could result because of the resonant characteristics of the filter capacitors together with the wiring inductance.

S1 senses the temperature of the inverter heatsink and provides a shutdown signal to the microcontroller on the Processor PWA when an overtemperature condition develops.

1.8 PROCESSOR PWA

(Refer to Diagram 5151586.)

The Processor PWA contains the microcontroller that performs system control, RS–232 data communications, alarm and indicator annunciation, and regulation of the ac output voltage. The microcontroller is a 8098 device with a 16–bit CPU, A/D converter with four multiplexed inputs, a PWM output, and a serial port.

The microcontroller operates with an 8–bit data bus and a 16–bit address bus. The data is multiplexed with the address lines; the bus is demultiplexed with a latch, U2. The data and address buses are routed to the external memory comprising an EPROM, U4, and RAM, U5. U3 is a PLD that decodes the address and read/write signals from the microcontroller, U1, and generates signals to enable memory and input/output devices. U3 also initializes the output devices during power–up and microcontroller reset. The Address Latch

Enable line (U1 pin 34) is used to provide a clock to the latch, U2, in order to demultiplex the bus. Data from the external memory is read when the Read line (U2 pin 33) is low and is latched into U1 when the line goes high. When the Write line (U1 pin 14) goes low, U1 removes the address from the bus and places the data on it. When the line goes high, the data is latched into the external memory.

The data bus is utilized to transmit control signals and receive status information. U3 generates the enable lines that control latches U8, U9, and tri-state buffer U10. U8 and U9 latch the output control signals while U10 couples the input status signals.

U7 pin 19, U7 pin 18, and U7 pin 17 provide the Clock, Data, and Latch Clock, respectively, for serial data transfer to the Display PWA. The state of the front panel indicators is changed by transmitting data into two 8-bit serial-in/parallel-out shift registers. The outputs of the registers are used to control the color of the indicators and whether they are on or off. An output from the Display PWA, DISBDINT, supplies a signal that is decoded to determine whether the front panel Test or Alarm Silence switch has been pressed. This signal is applied to U1 pin 1, the external interrupt input.

1.8.1 U9 and U10 Signals

U9 and U10 are open-collector drivers that are used to interface control signals from the Processor PWA to the other PWAs. They route the following control lines:

- U9 pin 13 provides the enable for the audible alarm located on the Control PWA. The line goes low to turn on the alarm, connecting the alarm across the 12V supply.

- U9 pin 12 provides the low battery shutdown signal, LOBATTSD. The line goes low to turn on an opto-isolator on the Control PWA. Low battery shutdown is executed when the battery becomes depleted during back-up mode operation of the GUPS.

- U9 pin 11 provides drive for the remote alarm relay that signals Low Battery, a condition of impending shutdown because of a discharged battery. The relay would be energized when the battery discharges to a state where approximately 20% of the full load backup time remains.

- U9 pin 10 provides drive for the remote alarm relay that signals failure of the ac input, Ac Fail. The relay would be energized when the ac input voltage is outside of the normal operating range.

- U10 pin 16 provides the enable for the rectifier bridge on the Rectifier PWA. This pin goes low to turn on the bridge SCRs.

- U10 pin 15 provides the enable for the doubler switch on the Rectifier PWA. This pin goes low to turn on the doubler SCR.

- U10 pin 14 provides the enable for the battery soft–start switch on the Rectifier PWA. The pin goes low to turn on the soft–start SCR.

- U10 pin 13 provides the enable for the battery switch on the Rectifier PWA. The pin goes low to turn on the SCR that connects the battery to the dc bus.

- U10 pin 12 provides the enable for the output relay on the Output Filter PWA. The pin goes low to energize the output relay from the 12V supply.

- U10 pin 11 provides the enable that places the charger in equalization mode. This pin goes low to turn on an opto–isolator on the Charger PWA.

- U10 pin 10 provides the enable that turns on the charger. The pin goes low to turn on an opto–isolator on the Charger PWA.

1.8.2 U11 Signals

U11 is a tri–state buffer that receives the follow signals:

- U1 pin 2 receives the signal from the Control PWA that calls for the ac output to be on. It is driven by an opto–isolator and goes high when the output should be energized.

- U11 pin 4 receives the signal from the Charger PWA that represents the level of charge current. The pin goes high when the charge current is less than 50 mA.

- U11 pin 3 receives the signal from the Inverter Power PWA that senses the state of the thermal switch. This pin goes low when an overtemperature condition exists.

- U11 pin 8 receives the signal from the Battery Interface PWA that represents whether the battery module is engaged. This pin goes low when a battery module is inserted into the GUPS. The GUPS will not operate without a battery module engaged.

1.8.3 U1 Signals

In addition, the following signals are applied directly to U1:

- U1 pin 4 receives a digital signal from the Rectifier PWA that provides a high speed indication of the state of the ac input. Pin 4 goes low when the ac input drops below 85 Vac when the GUPS is in the low range, and 170 Vac when in the high range.

- U1 pin 43 receives a dc voltage from the Control PWA that represents the ac output voltage. The microcontroller uses this voltage as a feedback signal and performs regulation of the RMS value by varying the amplitude of the reference. The response time of this loop is slow compared to the analog control loop on the Inverter PWA. The microcontroller generates the reference by sinusoidally modulating a variable duty cycle pulse that switches at 15.6 kHz, at U1 pin 13. The PWM signal is filtered on the Control PWA to produce the sine wave reference. The amplitude of the sine wave is adjusted by varying the modulation index of the pulse train.

- U1 pin 42 receives a dc voltage from the Rectifier PWA that represents the ac input voltage; it is generated by a RMS–DC converter.

- U1 pin 41 receives a dc voltage from the Control PWA that represents the voltage of the battery.

- U1 pin 40 receives a dc voltage from the Control PWA that represents the ac output current.

D1, R1 pins 1/5, and C13 perform a reset of U1 when the power is applied to allow the power supply to come within tolerance and the oscillator to stabilize before program execution is permitted. Y1, R4, C18, and C19 are part of the 12 MHz oscillator circuit that produces the clock signal for U1. U12 provides a precision, temperature compensated reference for U1.

RS–232 data communications are handled using the serial port of U1. Opto–isolators U14 and U15 are used to provide isolation of the receive and transmit signals, respectively. U13 is a RS–232 driver and receiver that generates a bi–polar supply from a 5V supply. U17, Q1, and T1 produces an isolated 12V supply; the isolated 12V is stepped down to 5V with the linear regulator U16. U17 runs at a frequency of 100 kHz with a fixed duty cycle of approximately 50%. D6 and D7 allow for reset of the transformer core. Overcurrent protection is provided with current sense resistor R16 and U17.

1.9 BATTERY CHARGER PWA

(Refer to Diagram 5151561.)

The battery charger utilizes a current–limited voltage source mode of operation. The battery charger is a flyback converter operating in current–mode at 75 kHz, drawing power from the high voltage dc bus. The mode of operation is changed to a current source when equalization of the battery is required.

The dc bus is applied through F1 to the input of the two transistor flyback converter. C1 serves as a low impedance source for the high frequency switching current. Q1 and Q2 are the power switches; these transistors are turned on and off simultaneously. D3 and D4 are clamp diodes that limit the peak voltage across Q1 and Q2 to the dc bus value. These diodes also allow reset of the coupled–inductor, L1.

L1 is an inductor that provides three secondary windings: two high voltage windings and one low voltage winding. The high voltage windings are series connected to produce the charger output while the low voltage winding supplies power to the control circuitry.

The output of L1 is rectified by D5 and D6. D13, D14, C2, C3, R44, and R45 form clamps that protect the rectifiers by limiting the peak voltage that is developed across them. R39, R40, C20, and C21 are snubbers that suppress high frequency oscillations. C4 and C5 are the output filter capacitors. D7 is an isolation diode that prevents discharge of the battery when the charger is off.

U3 is the controller IC that provides the high frequency drive signal and contains the voltage error amplifier and current comparator required for current–mode operation. The primary current, sensed by R1, is controlled in peak amplitude by the error signal generated by the amplifier.

Q3 and Q4 form a current amplifier that drives isolation transformer T1. C1 is an ac coupling capacitor that blocks the dc component of the drive signal. The two secondaries are wired in phase so that both power switches are turned on and off at the same time. D1, D2, D11, and D12 are zener diodes that clamp the maximum voltage that could appear at the gates of the MOSFETs.

U5 pin 7, R7, R8, and associated components sample and scale the output voltage before applying this voltage to U3. R18 is the float–voltage calibration potentiometer. R42, R28, R21, and an external thermistor in the battery module, in conjunction with U5 pin 7, provide temperature compensation of the charge voltage.

R6 is the sense resistor for the output current. U5 pin 1 amplifies the voltage drop across R6 and applies this voltage to the current error amplifier, U5 pin 8. The current error amplifier overrides the voltage error amplifier when the current limit level is exceeded. U5 pin 14 is a comparator that signals when a low current threshold is reached in the charging current. Opto–isolator U6 couples that signal to the Processor PWA.

When equalization is required, the charger mode of operation is changed into a current source. The control signal is coupled from the Processor PWA with opto–isolator, U2. The compliance voltage of the charger is increased by switching R35 across the resistor divider with U1 pins 2/4. At the same time, U1 pins 11/13 disconnects R34 from the feedback network of U5 pin 1 to increase the gain of the amplifier. This forces the charger to regulate the current at the equalization value.

Equalization is automatically accomplished every three months. Also, a decision as to whether equalization is required is made after 3 hours of

recharge. If the charge current is greater than the low current threshold after 3 hours of recharge, equalization is performed. Equalization is a constant current charge for 24 hours.

The control signal to turn the charge on and off is coupled from the Processor PWA with opto–isolator, U4. Q6 with Q7 clamp the error signal of U3 low to effect turn off of the charger.

1.10 DISPLAY PWA

(Refer to Diagram 5151592.)

The Display PWA contains the front panel indicators and the control switches. The indicators provide three colors: red and green by driving the individual LEDs in the indicators, and amber by driving both the red and green LEDs simultaneously. U2 and U3 are shift registers that store the drive signals for the required state of the indicators. The outputs of the shift registers are changed by serially clocking in data. U1 buffers the clock and data signals coming from the Processor PWA. U1 also outputs a signal to the Processor PWA that is decoded to determine if the Test, S2, or Alarm Silence, S3, switches have been pressed. The Output On switch, S1, is connected to circuitry on the Control PWA that switches the GUPS ac output.

1.11 OUTPUT FILTER PWA

(Refer to Diagram 5151563.)

The Output Filter PWA contains the inverter voltage sensing transformer, T1, that provides an isolated signal to the Control PWA for regulation of the inverter output. K1 is the relay that switches the GUPS ac output on and off. R1 and C1 form a damper for the ac output to maintain inverter stability. C2 and C3 are common–mode EMI filter capacitors that connect to the chassis ground.

1.12 BATTERY INTERFACE PWA

(Refer to Diagram 5151546.)

The Battery Interface PWA is an interconnecting board between the battery module and the GUPS. This interface connects the eight 24V sections of the battery in series to form the 192V output. It also routes the connections for the thermistor and the two connections for the module interlock, MODULE ENGAGED and 12V COMM.

1.13 BATTERY CONNECTOR PWA

(Refer to Diagram 5151566.)

The Battery Connector PWA is located in the battery module and is used to terminate the individual 24V sections of the 192V battery. E1 and E2 connect to the thermistor that is mounted in the battery module. The connection from J1 pin 4 to J1 pin 6 is the interlock for the determining whether the module is engaged.

1.14 RS-232 COMMUNICATIONS PORT

The RS-232 data communications port provides an interface between a data terminal (or a computer emulating a data terminal) and the GUPS. It allows transfer of information such as parameter values, mode of operation, alarm conditions. It is also utilized to perform calibration of the GUPS.

1.14.1 Applicable Documents

The RS-232 Standard, Interconnection of Data Terminal Equipment and Data Communications Equipment; Electrical Industries Association.

1.14.2 Hardware Interface

Interface signals for communication to and from the GUPS are provided via a DB-15 connector, which is located on the rear panel of the unit. The RS-232 interface connector is designated as J2. The connector pin out is as follows:

- Pin 2, Transmit from the GUPS;
- Pin 3, Signal Ground; and,
- Pin 10, Receive to the GUPS.

1.14.3 Software Interface

The RS-232 interface software which resides in the GUPS has the following communication features:

1. Two sets of remote terminal software commands:
   - Text data request commands, which are applicable for data terminal display of the unit status. Text data request commands return both descriptive text and the data values requested.
   - Fast "data only" data request commands called the Elgar Terminal Interface (ETI), for use by a program running on a host computer. The ETI commands return only the data values that are requested.
2. Data available via the RS-232 interface:
   - Ac line-loss signal.
   - Ac input voltage in floating point or hexadecimal.
   - Ac output voltage in floating point or hexadecimal.
   - Ac output current in floating point or hexadecimal.
   - Battery/charger dc voltage in floating point or hexadecimal.
   - Impending Shutdown.

1.14.4 RS-232 Protocol

The GUPS communications port protocol is as follows:

- Baud Rate, 9600
- Data Bits, 8
- Start Bits, 1
- Stop Bits, 1
- Parity, None.

1.14.5 Text Data Request Commands

The GUPS RS-232 text data mode commands have been developed for a user interface utilizing a data terminal. The text data mode commands provide formatted responses which include text which provides both the name of data parameters and the measured values. The following paragraphs provide a description of each of the GUPS 2400A text data requests that are supported.

1.14.5.1 List Selection Menu

The GUPS will display the following menu in response to a "space" (0x20) character:

c = Display time and date
k = Display calibration constants
l = ETI calibration
m = ETI A/D
n = ETI Float
s = Status registers
v = Display version

1.14.5.2 Display Date and Time

The GUPS will display the time and date since power-up, as well as the time and date from the battery-backed clock/calendar at power-up, in response to a Command "c" (lowercase C) character. For example:

```
Day: 1    Hour 4    Min 32    Sec 3   // Time since power-up
Time:  05:23:52:04                    // Time from clock/calendar at power-up
Date:  07-20-92     Day:  4           // Date from clock/calendar at power-up
Cycles:  2003                         // No. of 60 Hz cycles since power-up
```

1.14.5.3 Display Calibration Values

The GUPS will display the calibration constants for the A/D converter algorithms values in response to a Command "k" (lowercase K) character. For example:

```
Calibration Constants:
80 percent current: 32F8          // Output current in hexadecimal
105 percent current: 424B
150 percent current: 50E7
Minimum voltage band: 2000        // Output voltage in hexadecimal
Maximum voltage band: 2100
Battery good: 0198                // Battery voltage in hexadecimal
Battery bad: 0240
Battery shutdown: 0268
AC Line 85: 0125                  // AC input line voltage in hexadecimal
AC Line 95: 0146
AC Line 130: 01C3
AC Line 140: 01E6
AC Line 170: 0248
AC Line 190: 0289
AC Line 260: 036C
AC Line 280:  03A7
Vout rdbk cal: 91.3               // Output voltage readback calibration in
Vout rdbk dvm: 114.5                 floating point format
```

1.14.5.4 Display Status Registers and A/D values

The GUPS will display the two 16-bit status registers, along with the A/D values of the ac input voltage, Output voltage, output current, and battery/ charger voltage in response to a Command "s" (lowercase S) character. For example:

```
Status Word 1: 5540          // 16-bit status flags in hexadecimal
Status Word 2: 0283

A/D Values:                  // A/D values in floating point & hexadecimal
Output Voltage: 115.0, 2314
Output Current: 3.25, 0028
Input Voltage: 120.00, 0167
Battery Voltage: 190.00, 0284
```

1.14.5.5 Display Firmware Version Number

The GUPS 2400A will display the version number of the firmware in response to a Command "v" (lowercase V) character. For example:

```
Firmware version number:
P/N XXXXXXX-XX, Rev X.X
```

1.14.6 Elgar Terminal Interface (ETI) Data Request Commands

The GUPS RS-232 text data mode commands have been developed for use by a program running on a host computer. The ETI mode data request commands provide formatted responses which provide only the measured value data in a formatted form. The following paragraphs provide a description of each of the GUPS ETI data requests that are supported.

1.14.6.1 Provide Calibration Values

The GUPS will provide the calibration constants for the A/D converter algorithms values in response to a Command "l" (lowercase L) character. For example:

This command will return the GUPS calibration constants in the following order:

1.	Output Current at 80%	// current calibration in hexadecimal
2.	Output Current at 105%	
3.	Output Current at 150%	
4.	Minimum Output Voltage	// voltage calibration in hexadecimal
5.	Maximum Output Voltage	
6.	Battery Good Voltage	// battery voltage in hexadecimal
7.	Battery Bad Voltage	
8.	Battery Shutdown Voltage	
9.	AC Input at 85 Vac	// ac input line in hexadecimal
10.	AC Input at 95 Vac	
11.	AC Input at 130 Vac	
12.	AC Input at 140 Vac	
13.	AC Input at 170 Vac	
14.	AC Input at 190 Vac	
15.	AC Input at 260 Vac	
16.	AC Input at 280 Vac	

1.14.6.2 Provide Status Words and Hexadecimal A/D Values

The GUPS will provide the Status Words and Hexadecimal A/D calibration constants for the A/D converter algorithms values in response to a Command "m" (lowercase M) character. For example:

This command will return the A/D values and the unit status in the following order:

```
Status word 1                    // 16-bit status flags in hexadecimal
Status word 2
Output Voltage                   // A/D values in hexadecimal
Output Current
AC Input Voltage
Battery/Charger Voltage
```

1.14.6.3 Provide Status Words and Floating Point A/D Values

The GUPS will provide the Status Words and hexadecimal A/D calibration constants for the A/D converter algorithms values in response to a Command "n" (lowercase N) character.

This command will return the A/D values and the unit status as in the "m" command, but the voltages and currents will be returned in IEEE floating point format.

1.14.7 Status Words

The status words may be used to examine the current state of the GUPS, but are not meant to be used in applications that require time critical response, such as detection of loss of ac input power. The "Line Loss" message sent from the GUPS, or the Ac Line Loss relay on the rear panel, will have the quickest response time.

1.14.7.1 Status Word 1 Format

Table 1–1 provides the bit position information and definition of the data in Status Word 1.

Table 1–1. Status Word 1

Bit	Name	Definition
0	Over Temperature	0 = Normal Operation 1 = Over Temperature This status bit indicates that the thermostat internal to the GUPS has exceeded its trip point. A binary value of 0 indicates normal operation, while a binary value of 1 indicates that the thermostat sensor has exceeded its trip point value.
1	Alarm Sense	0 = Alarm Not Sensed 1 = Alarm Sensed This bit indicates that an alarm condition is currently being detected by the unit. A binary value of 0 indicates that no alarms are being sensed, while a binary value of 1 indicates that an alarm is being sensed.
2	Alarm Silence	0 = Alarm Silence Not Enabled 1 = Alarm Silence Enabled This bit reflects the setting of the front panel Alarm Silence switch of the GUPS. A binary value of 0 indicates that the Alarm Silence is Not Enabled (when an alarm condition is sensed, the audible alarm will sound), while a binary 1 indicates that the Alarm Silence is Enabled (a subsequent change in the alarm condition will re–enable the alarm).
3	Charger Status	0 = Charger Not On 1 = Charger On This bit reflects the condition of the charger enable logic of the GUPS. A binary value of 0 indicates that the charger is not on, while a binary value of 1 indicates that the charger is on.
4	Current Overload	0 = Normal Operation 1 = Current Overload This bit indicates that the unit has sensed a current overload of greater than 105% of the specified output current. A binary value of 0 indicates normal operation, while a binary value of 1 indicates that the output current is greater than 105% of the specified current output capability of the unit.
5	Battery Switch	0 = Battery Switch Not On 1 = Battery Switch On This bit reflects the status of the SCR battery switch in the GUPS which connects the battery to the internal dc bus. A binary value of 0 indicates that the battery switch is not on, while a binary value of 1 indicates that the battery switch is on.
6	Test Mode	0 = Normal Operation 1 = Test Mode This bit indicates if the GUPS is in the test mode. A binary value of 0 indicates that the unit is in the normal operating mode, while a binary value of 1 indicates that the unit is in the test mode (as commanded by the TEST button on the front panel).

Bit	Name	Definition
7	Inverter Status	0 = Inverter Not On 1 = Inverter On This bit indicates the operating condition of the output inverter of the GUPS. A binary value of 0 indicates that the output inverter is not on, while a binary value of 1 indicates that the inverter is on.
8	Output Relay	0 = Output Relay Open 1 = Output Relay Closed This status bit indicates the state of the output relay. A binary value of 0 indicates that the output relay is open, while a binary value of 1 indicates that the output relay is closed.
9	Impending Shutdown	0 = Greater Than 1 Minute 1 = Less Than 1 Minute This status bit indicates the status of the battery of the unit. A binary value of 0 indicates more than 1 minute of backup time is available or that the battery voltage is greater than 177V, while a binary value of 1 indicates that less than 1 minute of backup time is available or that the battery voltage is less than 177V.
10	Rectifier Slow Start	0 = Normal Operation 1 = Rectifier In Slow Start This bit indicates that the unit is in the rectifier slow start mode. A binary value of 0 indicates that the unit is in the normal operating mode, while a binary value of 1 indicates that the unit is in the rectifier slow start mode.
11	Equalization Charge	0 = Equalization Charge Not On 1 = Equalization Charge On This bit indicates that the unit is in equalization charge. A binary value of 0 indicates that the unit is in the normal operating mode, while a binary value of 1 indicates that the unit is in the equalization charge mode.
12	Power Available	0 = Power Not Available 1 = Power Available This bit indicates that power is available to the unit either from the ac input or the battery. A binary value of 0 indicates that power is not available, while a binary value of 1 indicates that power is available.
13	PWM Soft Start	0 = Normal Operation 1 = Unit In Soft Start Mode This status bit indicates that the GUPS is in the PWM soft start mode. A binary value of 0 indicates that the input is in the normal operating mode, while a binary value of 1 indicates that the unit is in the soft start mode.
14	Voltage Doubler	0 = Voltage Doubler Not On 1 = Voltage Doubler On This status bit indicates the operating condition of the voltage doubler input circuit. A binary value of 0 indicates that the voltage doubler input circuit is not activated, while a binary value of 1 indicates that the voltage doubler circuit is activated.

Bit	Name	Definition
15	Battery Self Start	0 = Normal Operation 1 = Battery Slow Start This status bit indicates that the unit is in the battery slow start mode. A binary value of 0 indicates that the unit is in the normal operating mode, while a binary value of 1 indicates that the unit is in the battery slow start mode.

1.14.7.2 Status Word 2 Format

Table 1–2 provides the bit position information and definition of the data in Status Word 2.

Table 1–2. Status Word 2

Bit	Name	Definition
0	Running On Battery	0 = Running on ac 1 = Running on Battery This status bit indicates that the unit is operating on batteries. A binary value of 0 indicates that the unit is running on the ac input, while a binary value of 1 indicates that the unit is running on batteries.
1	Running on Low Line Range	0 = Not Running on Low Line Range 1 = Running on Low Line Range This status bit indicates that the unit ac input line is in the low range. A binary value of 0 indicates that the ac input line is not in the low range, while a binary value of 1 indicates that the ac input line is in the low line range (85 to 140 Vac).
2	Inverter Keypress	0 = No Keypress Pending 1 = Inverter Keypress Pending This status bit indicates that a front panel keypress has occurred. A binary value of 0 indicates that no keypresses are pending, while a binary value of 1 indicates that a keypress has occurred.
3	System Shutdown	0 = System Operating 1 = System Shutdown This status bit indicates that the system has been commanded to shut down, and that a system shutdown is in effect. A binary value of 0 indicates that the system is operating (normal operating mode), while a binary value of 1 indicates that the unit is in the system shutdown mode.

Bit	Name	Definition
4	Running on High Line Range	0 = Not Running on High Line Range 1 = Running on High Line Range This status bit indicates that the ac input line is in the high range. A binary value of 0 indicates that the ac input line is not in the high line range, while a binary value of 1 indicates that the input line is in the high line range (170 to 280 Vac).
5	Running on Ac Line	0 = Running on Battery 1 = Running on ac Line This status bit indicates that the unit is operating on the ac input. A binary value of 0 indicates that the unit is running on battery input, while a binary value of 1 indicates that the unit is running on the ac input.
6	150% Overload Sense	0 = Normal Operation 1 = 150% Overload Detected This status bit indicates that the unit has sensed a current overload of greater than 150% of the specified output current. A binary value of 0 indicates normal operation, while a binary value of 1 indicates that the output current is greater than 150% of the specified current output capability of the GUPS.
7	Float Timer Time-Out	0 = Not Float Charging 1 = Float Timer Time-Out This status bit indicates the condition of the float timer function. A binary value of 0 indicates that the timer has not timed out, while a binary value of 1 indicates that the unit float timer has timed out.
8	Wait To Equalize	0 = No Equalization Pending 1 = Waiting to Equalize This status bit indicates if the unit is waiting to equalize the batteries. A binary value of 0 indicates that the unit has no equalization pending, while a binary value of 1 indicates that the unit is waiting to equalize the batteries.
9	Pass/Fail System Self-Test	0 = Self Test Passed 1 = Self Test Failed This status bit indicates the status of the last run system self-test. A binary value of 0 indicates that the unit passed the last self-test, while a binary value of 1 indicates that the unit has failed the last self-test.
10	System Down	0 = System Operational 1 = System is Shutting Down This status bit indicates that the system is in the shutdown mode. A binary value of 0 indicates the system is operational, while a binary value of 1 indicates that the unit is in the system shutdown mode.

Bit	Name	Definition
11	Ac Input Line Out of Range	0 = Ac Input Line In Range 1 = Ac Input Lien Out of Range This bit indicates the condition of the ac input line. A binary value of 0 indicates that the ac input line is within the specified input range (85 to 140 Vac for the low line range, or 170 to 280 Vac for the high line range), while a binary 1 indicates that the ac input line is not within the specified input range.
12	Delayed Event Flag	0 = No Pending Delayed Events 1 = Delayed Event Pending This bit indicates the status of pending delayed events. A binary value of 0 indicates that the unit has no pending delayed events, while a binary 1 indicates that the unit has at least one delayed event pending.
13	Reserved	
14	Reserved	
15	Improper Output Voltage	0 = Output Normal 1 = Output Low This bit indicates that the unit has sensed a sustained low voltage condition on the output. A binary value of 0 indicates that the output is normal, while a binary 1 indicates that the output voltage has dropped to less than 80% of its nominal value.

1.14.8 Ac Line Fail Signal

When the ac input is lost, the GUPS will send the message "Line Loss detected" out the RS–232 port. Applications may use this as a trigger to take action on a host computer.

SECTION II

MAINTENANCE

2.1 INTRODUCTION

This section contains procedures for preventive and corrective maintenance. Preventive maintenance consists of procedures for cleaning and inspecting the unit. Corrective maintenance includes checkout, troubleshooting, disassembly for repair, and adjustments. A list of special tools and test equipment is also included in this section.

WARNING

Hazardous voltages are present when operating this equipment. Read the Safety Notes on Page ii before performing installation, operation or maintenance.

CAUTION

Do not use test instruments that connect Circuit Common to Ground. Differential measurements with grounded instruments are recommended.

NOTE

Elgar Corporation is not responsible for a GUPS returned for repair without proper authorization. Contact Elgar Corporation or its authorized representative for the procedures to return the instrument.

This section contains procedures for performance testing, troubleshooting, and calibration of the GUPS 2400A. These procedures should be used following the repair or replacement of a subassembly. The GUPS 2400A is delivered with all adjustments and calibration completed. Therefore, no periodic adjustments should be required.

WARNING

The maintenance and calibration procedures require that protective covers be removed and adjustments made while power is applied to the unit. Such procedures should be executed only by qualified personnel who are knowledgeable of the potential hazards due to electrical shock. All connections for measurements should be made prior to energizing the unit. Wait 3 minutes after power is disconnected before covers are removed and connections are made.

2.2 PREVENTIVE MAINTENANCE

Preventive maintenance is comprised of cleaning and inspection of the unit. The GUPS should be cleaned and inspected at regular, periodic intervals (as required to control accumulation of dust). The top panel of the unit is removable for access to components. To clean and inspect the unit, perform the following:

1. Inspect circuit board parts for evidence of overheating (burned or distorted resistors, capacitors, and charred insulation). Replace parts suspected of damage.

2. Inspect circuit board parts for evidence of physical damage (broken or cracked capacitors and resistors, broken solder joints, and discontinuities in circuit foil paths).

3. Inspect circuit board connectors for corrosion and obvious physical damage; replace if necessary.

4. Inspect the chassis and front panel–mounted components for broken connections, burned insulation or damaged parts.

5. Inspect transformers for evidence of overheating such as discolored insulation.

6. Inspect the rear panel connectors for damage such as broken wire leads or cracked insulation.

2.3 TEST EQUIPMENT

The test equipment required for maintenance and adjustments are listed in Table 2–1. Equivalent test equipment may be used.

Table 2–1. Required Test Equipment

Equipment	Recommended Model
Data Terminal	
AC Power Sources (3)	Elgar Model 1751SX
Resistive Load	States Load Box
Power Meter	YEW Model 2505
Oscilloscope	Tektronix Model 2210
Digital Multimeter (DMM)	Fluke Model 8842
Distortion Analyzer	HP Model 333A
Capacitive/Inductive Load	
Current Transformer	Crompton (200:5)
Frequency Counter	HP 5316A
Current Probe	Fluke 80i–600
DC Power Supply (200V, 2A)	Elgar AT8000

2.4 APPLICABLE SOFTWARE

Specifications for the RS-232 data communications interface is presented in Section 1.14. All required software resides in the GUPS 2400A.

2.5 PERFORMANCE TESTING

2.5.1 Initial Setup

Perform the following:

1. Remove the Battery Module from the chassis.

WARNING

Hazardous voltages could be present on the Battery Interface PWA connector if sufficient time is not allowed for discharge after power is removed. Before connecting a test adapter to the Battery Interface PWA connector, wait 3 minutes to allow internal voltages to drop to safe levels. Do not touch any terminals of the connector when inserting an adapter.

2. Connect a 200 Vdc/2 Adc power supply in place of the battery; an adapter is required using a Positronic connector, PLC24F300A1 .
   a. Jumper from J1 pin 4 to J1 pin 6;
   b. 10 kΩ, 1%, 0.25W resistor from J1 pin 8 to J1 pin 7;
   c. 100 kΩ, 5%, 1W resistor from J1 pin 9 to J1 pin 24.
3. Connect a data terminal to the RS-232 port.
4. Set the dc power supply for 200 ±2 Vdc.
5. Turn off the GUPS ac input circuit breaker. Apply 120 Vac, 60 Hz to the ac input connector, J1.
6. Turn on the ac input circuit breaker. After approximately 10 seconds, the AC INPUT and BATT indicators should be green (the inverter should be operating). Ensure that the output relay is off.
7. The steady state ac input current should be ≤3.3 Aac.
8. Repeat step 5. above for 50 Hz and 400 Hz ac input frequencies.
9. Turn off the GUPS ac input circuit breaker. Apply 240 Vac, 60 Hz to the ac input. Turn on the ac input circuit breaker. After approximately 10 seconds, the AC INPUT and BATT indicators should be green. Ensure that the output relay is off.
10. The steady state ac input current should be ≤1.7 Aac.
11. Repeat step 9. above with 50 Hz and 400 Hz ac input frequencies.
12. Turn off the GUPS ac input circuit breaker.

2.5.2 Ac Input Characteristics

Perform the following:

1. Apply a 2400VA/1920W, 0.8 lagging power factor load to the GUPS ac output.
2. Apply 120 Vac, 60 Hz to the ac input.
3. Turn on the ac input circuit breaker. After the start up delay, enable the output relay by pressing the OUTPUT ON pushbutton switch on the GUPS front panel.
4. Verify that the ac input current is ≤37 Aac.
5. Verify that the efficiency is ≥72% by calculating the ratio of the ac output power divided by the ac input power as measured on a power meter.
6. Increase ac input voltage to 240 Vac and verify that the ac input current is ≤19 Aac.
7. Verify that the efficiency is ≥72% by calculating the ratio of the ac output power divided by the ac input power as measured on a power meter.
8. Repeat steps 1. through 7. above with 50 Hz and 400 Hz ac input frequency.
9. Upon completion, reduce the ac input to 0 Vac.

2.5.3 Ac Input Voltage Monitor

Perform the following:

1. Apply 120 Vac, 60 Hz to the ac input of the GUPS.
2. Enable the output relay and verify that the ac output at J3 is 115.0 ±3.5 Vac at 60.0 ±0.6 Hz.
3. Reduce the ac input voltage to 95 ±2 Vac.
4. Verify that the front panel AC INPUT indicator changes from green to amber.
5. Reduce the ac input to 84 ±2 Vac. The following must occur:
   a. The rectifier must be disabled.
   b. The AC INPUT indicator changes from amber to red.
   c. The remote alarm relay contacts must close.
6. Increase the ac input from 80 to 90 ±2 Vac. Verify the following:
   a. The rectifier must be enabled.
   b. The AC INPUT indicator changes from red to amber.
   c. The remote alarm relay contacts must open.
7. Increase the ac input from 95 to 100 ±2 Vac. The AC INPUT indicator must change from amber to green.

8. Increase the AC input from 120 to 135 ±2 Vac. The AC INPUT indicator must change from green to amber.

9. Increase the ac input from 140 to 145 ±2 Vac. Verify the following:

   a. The rectifier must be disabled.
   b. The AC INPUT indicator changes from amber to red.
   c. The remote alarm relay contacts must close.

10. Decrease the ac input from 146 to 140 ±2 Vac. Verify the following:

   a. The rectifier must be enabled.
   b. The AC INPUT indicator changes from red to amber.
   c. The remote alarm relay contacts must open.

11. Decrease the ac input from 135 to 130 ±2 Vac. The AC INPUT indicator must change from amber to green.

12. Repeat steps 2. through 5. above using the following:

   a. 240 ±2 Vac for "nominal" condition;

   b. 190 ±6 Vac for "marginal" condition; and,

   c. 168 ±6 Vac for "power fail" condition.

   d. Repeat step 6. above using 160 to 175 ±6 Vac.

   e. Repeat step 7. above using 190 to 195 ±6 Vac.

   f. Repeat step 8. above using 240 to 265 ±10 Vac.

   g. Repeat step 9. above using 280 to 285 ±14 Vac.

   h. Repeat step 10. above using 287 to 280 ±14 Vac.

   i. Repeat step 11. above using 270 to 260 ±10 Vac.

2.5.4 Ac Output Load

Perform the following:

1. With no ac output load, adjust the ac input for 120 ±1 Vac, 60 Hz. Enable the ac output relay. The GUPS ac output should measure 115.0 ±3.45 Vac.

2. Using the distortion analyzer, check the ac output distortion. The distortion should be <2% total harmonic distortion (THD).

3. The ac output frequency should be 60.00 ±0.06 Hz.

4. Vary the ac input voltage in 10 Vac increments from 87 Vac to 140 Vac and verify that the ac output voltage, distortion and frequency remain within specifications.

5. Repeat steps 1. through 4. above using 50 Hz and again using 400 Hz ac line frequency.

6. Repeat steps 1. through 5. above using 240 ±2 Vac in step 1. and 172 Vac to 280 Vac in step 4.

7. Repeat steps 1. through 6. above, first using a 0.8 lagging power factor load and then a 0.8 leading power factor load. Both loads should be at 2400 VA.

8. Set the load for a 1920W resistive load. Repeat steps 1. through 6. above.

9. Adjust the ac input for 120 ±1 Vac, 60 Hz. Set the resistive load for 16.7 ±0.5 Aac output current. Verify that the LOAD indicator on the GUPS front panel changes from green to amber.

10. Set the resistive load for 21.90 ±0.66 Aac. Verify that the LOAD indicator changes from amber to red and that the audible alarm sounds. The ac output relay should open after 30 seconds.

11. Reduce the ac load to 0 Aac. Enable the output relay and verify that the LOAD indicator is green.

12. Set the resistive load for 31.3 ±1.0 Aac. Verify that the LOAD indicator changes from green to red and that the audible alarm sounds. The output relay should open after 3 seconds. Reduce the load to 0 Aac.

2.5.5 Battery and Battery Charger Characteristics

Perform the following:

1. Close the ac output relay. The AC INPUT, BATT, LOAD, TEMP and TEST indicators should be green.

2. Reduce the ac input voltage to 0 Vac. The audible alarm should sound. Silence the audible alarm.

3. Adjust the dc power supply until the BATT indicator changes from green to amber. The voltage where this transition occurs should be 192 ±2 Vdc.

4. Adjust the dc power supply until the BATT indicator changes from amber to red. The voltage where this transition occurs should be 177 ±2 Vdc. Also, the audible alarm should sound and the Low Battery relay contacts should close.

5. Adjust the dc power supply until the inverter shuts down. The voltage where this occurs should be 173 ±2 Vdc.

6. Reapply 120 Vac, 60 Hz. Adjust the dc power supply to 200 Vdc. Close the ac output relay.

7. The Battery Charger float voltage at the Battery Interface PWA connector should be 230.4 ±2.3 Vdc.

NOTE

The internal battery charger will force the output voltage of the dc power supply above the set level of 200 Vdc. If the dc power supply will not allow this condition, its output should be diode isolated before connecting it to the GUPS.

8. Turn off the ac output of the GUPS by pressing the OUTPUT ON pushbutton. Turn off the GUPS ac input circuit. Reduce the ac input and dc power supply to 0V.

9. Install the Battery Module into the chassis.

10. Apply 120 ±1 Vac, 60 Hz to the ac input.

11. Turn on the GUPS ac input circuit breaker. After a 10 second delay, enable the ac output of the GUPS.

12. Apply a 1920W resistive load to the ac output. Verify that the ac output voltage, current, frequency and distortion are within specification.

13. Adjust the ac input to 0 Vac to simulate a power failure. The GUPS should be operating in backup mode, drawing power from the Battery Module. The AC INPUT indicator should be red, the Audible Alarm should be on and the BATT indicator should be green or amber.

14. The ac output voltage should be 115.0 ±3.45 Vac, the ac output frequency should be 60.00 ±0.06 Hz, and the distortion should be <2% THD.

15. Set ac input to 120 Vac to simulate a power return. The GUPS should return to the normal mode of operation. The AC INPUT and BATT indicators will be green and the audible alarm will be off.

16. Turn off the ac output of the GUPS by pressing the OUTPUT ON pushbutton. Turn off the GUPS ac input circuit breaker.

2.6 CALIBRATION

Calibration is accomplished using the GUPS 2400A RS-232 data communications interface. It provides two modes of operation:

- A user mode for status and parameter annunciation;
- A debug mode for calibration of the unit.

Interface signals for communication to and from the GUPS 2400A are provided through a DB-15 connector, which is located on the rear panel of the unit (designated J2). The connector pinout is as follows:

- Pin 2, Transmit from the GUPS;
- Pin 3, Signal Ground;
- Pin 10, Receive to the GUPS.

The communications interface is compatible with RS–232 and has the following protocol:

- Baud Rate, 9600;
- Data Bits, 8;
- Start Bits, 1;
- Stop Bits, 1;
- Parity, None.

All software required to execute communications between the GUPS and a data terminal (or a computer emulating a data terminal) is resident in the GUPS.

In order to calibrate the GUPS, the interface must be configured for the debug mode. Because this mode provides the capability to change the operation of the unit, care must be exercise during the procedures.

WARNING

Execute the calibration instructions exactly as specified. Inadvertently sending erroneous characters could modify calibration constants that could cause improper operation of the unit.

2.6.1 Terminal Operation

Perform the following:

1. Connect the data terminal to the GUPS and energize the GUPS.

2. Send an ASCII character "!" (press the Shift and 1,! keys) to enter the debug mode. The message "Entering Debug Mode" will be displayed on the screen.

3. When calibration is completed, the GUPS interface should be reconfigured to the user mode.

4. Send an ASCII character "!" (press the Shift and 1,! keys) to enter the user mode. The message "Entering User Mode" will be displayed on the screen.

5. The data terminal can now be disconnected.

2.6.2 Dc Offset Adjustment

Perform the following:

1. Connect an oscilloscope to observe the current in the conductors going through the T2 current transformer located on the T1 transformer assembly.

2. Set the oscilloscope time base at 5 mSec/Div.

3. Set the ac input source to 120 Vac, 60 Hz.

4. Turn off the ac output load.

5. Turn on the GUPS ac input circuit breaker. After the inverter has started up, verify that the amplitudes of the positive and the negative peaks of the current waveform are equal.

NOTE

Adjust R48 on the Control PWA as required. Afterward, apply torque seal to potentiometer R48.

6. Turn off the GUPS ac input circuit breaker. Remove the current probe.

2.6.3 Battery Charger Float Voltage Adjustment

WARNING

Hazardous voltages could be present on the Battery Interface PWA connector if sufficient time is not allowed for discharge after power is removed. Before connecting a test adapter to the Battery Interface PWA connector, wait 3 minutes to allow internal voltages to drop to safe levels. Do not touch any terminals of the connector when inserting an adapter.

Perform the following:

1. Replace the battery module with an adapter (Positronic connector PLC24F300A1) that has the following terminations to the Battery Interface PWA:

   a. Jumper from J1 pin 4 to J1 pin 6;

   b. 10 kΩ, 1%, 0.25W resistor from J1 pin 8 to J1 pin 7;

   c. 100 kΩ, 5%, 1W resistor from J1 pin 9 to J1 pin 24.

2. Set the ac input source to 120 Vac, 60 Hz.

3. Turn on the GUPS ac input circuit breaker. After the start-up delay, the charger should come on and its output should be 230.4 ±2.3 Vdc.

NOTE

Adjust R18 on the Battery Charger PWA as required. Afterward, apply torque seal to potentiometer R18.

2.6.4 Ac Input Voltage Monitor Calibration

WARNING

Increasing the input voltage from 140 Vac to 170 Vac will damage the unit (because the voltage doubler on the rectifier is ON, producing excessive dc bus voltage). After setting the ac input voltage between 85 Vac to 140 Vac, the input voltage must first be set to 0 Vac before it is set above 140 Vac.

Perform the following:

1. Set the ac input to 120 Vac and turn on the GUPS. Verify that the GUPS is in "debug" mode by pressing "!" on the keyboard of the terminal.

2. From the menu, select "a" to begin the calibration. The program will prompt to set the ac input voltage to 85 Vac and press <Enter> on the keyboard. The program will then prompt for the next input voltage.

3. Repeat step 2. above for the following ac input voltages:

   - 95 Vac
   - 130 Vac
   - 140 Vac
   - 170 Vac
   - 190 Vac
   - 260 Vac
   - 280 Vac

4. Press the <Space Bar> to return to the selection menu.

5. Reduce the ac input voltage to 0 Vac.

2.6.5 Battery Voltage Monitor Calibration

WARNING

Hazardous voltages could be present on the Battery Interface PWA connector if sufficient time is not allow for discharge after power is removed. Before connecting a test adapter to the Battery Interface PWA connector, wait 3 minutes to allow internal voltages to drop to safe levels. Do not touch any terminals of the connector when inserting an adapter.

Perform the following:

1. Connect a 200 Vdc/2 Adc power supply in place of the battery (an adapter is required using a Positronic connector, PLC24F300A1). J1 pin 4 and J1 pin 6 of the Battery Interface PWA must be shorted together.

2. With the GUPS ac input circuit breaker off, set the high voltage dc power supply to 200 Vdc.

3. Apply 120 Vac, 60 Hz to the GUPS ac input.

4. Turn on the GUPS ac input circuit breaker. After the inverter has started up, close the ac output relay.

5. Set the ac input to 0 Vac. The GUPS should transfer to the high voltage dc power supply.

6. From the menu, select "Calibrate battery." The terminal screen should display the message: "Set battery good voltage."

7. Adjust the high voltage dc power supply so the battery voltage is at 192 Vdc. Press <Enter> on the keyboard.

8. Repeat step 7. above for the following voltages:

   - "Battery bad", 177Vdc
   - "Shutdown", 173 Vdc.

9. Press the <Space Bar> to return to the selection menu.

2.6.6 Output Current Monitor Calibration

WARNING

During calibration, the overcurrent supervisory function is disabled. Therefore, running at loads greater than the rated output will not cause a shutdown. DO NOT run the GUPS for extended periods in this mode.

Perform the following:

1. Set the ac input voltage to 120 Vac, 60 Hz.
2. From the menu, select "Calibrate current" by pressing "i". The terminal screen will display "Set load to 80 percent".
3. Adjust the ac output load so the output current is at 16.7 Aac. Press <Enter> on the keyboard.
4. Repeat step 3. above for the following ac loads
   - 105%, 22 Aac
   - 150%, 31.4 Aac.
5. Press the <Space Bar> to return to the selection menu.

2.6.7 Date and Time Set

Perform the following:

1. From the menu, select "u" to set the date. The program will prompt for the day, month and year. Enter each number separated by a space. The day is a number from 1 to 7, 1 being Sunday. Enter the year by entering only the last two digits (e.g., enter "93" for 1993). Press the <Enter> key after all numerals have been entered.
2. From the menu, select "t" to set the time. The program will prompt for hours, minutes, and seconds. Enter each number in military time, separated by a space. Press the <Enter> key after all numbers have been entered.
3. Press the "!" key to enter the user mode. Calibration is complete.
4. Open the ac output relay.
5. Turn off the GUPS ac input circuit breaker.

2.7 CORRECTIVE MAINTENANCE

Corrective maintenance should be performed after checkout and/or troubleshooting have determined that a fault condition exists or there is a defective component.

2.7.1 Repair and Replacement

Generally, if any parts are suspected of damage, they should be checked with suitable instruments for proper electrical values prior to replacement. The parts lists and schematics contained in Sections III and IV are provided to aid in repairing the unit. Replacement parts should be exactly those listed in the appropriate parts list. Elgar Customer Service representatives can be contacted for assistance if required. **Do not attempt repair on a GUPS 2400A if the factory warranty is still in effect.**

2.7.2 Circuit Board Assembly Repair

The circuit board assemblies can either be repaired or replaced if either components or the circuit board itself are damaged. De-energize the unit before removing any circuit board assembly. Also disconnect AC power and battery power.

Carefully disconnect all plugs and remove the mounting screws. Use standard circuit board repair techniques for unsoldering components to be replaced. Remove integrated circuits from sockets with the appropriate IC extractor tool and very carefully ensure proper alignment when the new IC is installed.

2.7.3 Factory Repair

Should it be necessary to return an instrument to the factory for repair, contact the Elgar Corporation Customer Service Department for authorization to make the shipment. **DO NOT RETURN THE UNIT FOR REPAIR WITHOUT AUTHORIZATION.**

SECTION III

PARTS LISTS

3.1 GENERAL

This section contains a listing of all part numbers used in the manufacture of the GUPS 2400A Global Uninterruptible Power Supply. Parts are located on the diagrams provided in Section IV and correlated on the parts list by using their reference designators and/or Elgar part number.

3.2 SPARE PARTS ORDERING

When ordering spare parts, specify the Elgar part number, number, instrument model number and instrument name when ordering.

3.3 PARTS LISTS

Parts lists included in this section are listed in Table 3–1.

Table 3–1. GUPS 2400A Parts Lists

Number	Assembly Name
5151501–01	Final Assembly
5151500–01	Chassis Assembly
5151559–01	Rectifier Assembly
5151562–01	Control Assembly
5151560–01	Inverter Power Assembly
5151586–01	Processor Board Assembly
5151502–01	Battery Module Assembly
5151561–01	Battery Charger Assembly
5151592–01	Display Plate Assembly
5151565–01	Display Assembly
5151563–01	Output Filter Assembly
5151564–01	Battery Interface Assembly
5151566–01	Battery Connector Assembly
5151626–01	Output Transformer Assembly
5151537–01	Heatsink Assembly

NOTES

ASSY PART NO.	TITLE	SHT. 1 OF 2	REV.	ELGAR
5151501-01	FINAL ASSY GUPS2400A	SHT. — IS — SIZE	G	

DRAWN	VAL SCHNEIDER	DATE	11/2/92	PROJ. ENG.	DATE 11/16/92
CHECKED	Valerie Schneider	DATE	11/10/92	QA-REL.	DATE 11/18/92

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	◢								PROD REL PER DRN RO 425	VAL SCHNEIDER	Val Schneider	Lorey	11/16/92
B	◢								REVISED PER ECN 8549/A	Rutter	VLS	VLS	3/17/93
C	◢								REVISED PER ECN 8635	Rutter	Val S	Val S	5/5/93
D	◢								REVISED RER ECN 8643	Rutter	Val S	Val S	5/5/93
E	◢								REVISED PER ECN 8788	Jew	STAPP	A. Stapp	3-21-94
F	◢								REVISED PER ECN 8851	Jew	STAPP	A Stapp	3-21-94
G	◢								REVISED PER ECN 8907	Jew	STAPP	A. Stapp	3-21-94

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X									
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

DISTRIBUTION: JOANW -

BILL OF MATERIAL
AS OF 03/17/94

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 109 FGI

5151501-01 OPCODE: 0 REV: G GUPS 2400A
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

OP: ORDER POLICY CODE
REQ: N=PART OPTIONAL
Y=PART REQUIRED
PF: N=PART DOES NOT PRINT ON SALES ORDER
Y=PART PRINTS ON SALES ORDER W/O PRICE
P=PART PRINTS ON SALES ORDER WITH PRICE

PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQF	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
5151500-01	BASE CHASSIS ASSY	0	F	1	1.000	1.000	EA	M	YN	1.000	0	0		00/00/00	99/99/99
5151502-01	BATTERY MODULE ASSY	0	B	2	1.000	1.000	EA	M	YN	1.000	0	0		00/00/00	99/99/99
7151500-01	INSTALL DWG MSS-3	3	C	3	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
5151537-01	H/S ASSY,GUPS2400	3	E	4	1.000	1.000	EA	M	YN	1.000	0	0		00/00/00	99/99/99
6152000-01	WIRE DIAGRAM	3	C	5	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
9960066-01	LABEL SERIAL TAG	3	C	6	1.000	1.000	EA	B	YN	1.000	0	0	REF	00/00/00	99/99/99
110EG20-05	SCR,8-32PFH,100DEGSS.31LG	3		7	6.000	1.000	EA	F	YN	6.000	0	0	REF	00/00/00	99/99/99
109-961-2X	SEALANT LOCTITE #222 S	3	A	8	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
T151629-01	CALIB PROC,GUPS2400AD	3	F	10	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
T151500-01	TEST PROC,GUPS2400A	3	E	11	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
109-961-26	RTV,RUBBER CMPD,CLEAR	3	A	20	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
A151501-01	KIT,MATE CONN,GUPS2400A	3	A	100	.000	1.000	EA	M	YN	.000	0	0	REF	00/00/00	99/99/99
M151501-01	MANUAL OPER GUPS 2400A	3	B	500	1.000	1.000	EA	F	YN	1.000	0	0		00/00/00	99/99/99
M151501-02	MANUAL,SERVICE,GUPS 2400A	3	B	501	.000	1.000	EA	P	YN	.000	0	0	REF	00/00/00	99/99/99

ASSY PART NO.	TITLE	SHT. 1 OF 4	REV.	ELGAR
5151500-01	CHASSIS ASSY W/O BATTERY	SHT. — IS — SIZE	F	

DRAWN	VAL SCHNEIDER	DATE 7/31/92	PROJ. ENG.		DATE 11/16/92
CHECKED	Schneider	DATE 11/10/92	QA-REL.		DATE 11/18/92

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	◣								PROD REL PER DRN R0425	SCHNEIDER	Schneider		11/16/92
B	◣								REVISED PER ECN 8549/A	Rutter			3/17/93
C	◣								REVISED PER ECN 8635	Rutter			5/5/93
D	◣								REVISED PER ECN 8760	Schatt	A. Stapp		11/5/93
E									REVISED PER ECN 8803	Jaw	STAPP	A. Stapp	3-21-94
F									REVISED PER ECN 8907	Jaw	STAPP	A. Stapp	3-21-94

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X								CHASSIS ASSY W/O BATTERY MOD	
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

1001030-01

BILL OF MATERIAL
AS OF 03/17/94

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 109 FGI

OP: ORDER POLICY CODE
REQ: N=PART OPTIONAL
Y=PART REQUIRED
PF: N=PART DOES NOT PRINT ON SALES ORDER
Y=PART PRINTS ON SALES ORDER W/O PRICE
P=PART PRINTS ON SALES ORDER WITH PRICE

5151500-01 OPCODE: 0 REV: F BASE CHASSIS ASSY
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQ	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
9151504-01	CHASSIS,MSS-3 GUPS2400	3	D	1	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151505-01	REAR PANEL,CHASIS	3	B	2	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151506-01	FRONT PANEL CHASSIS SS	3	C	3	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151507-01	TOP COVER,GUPS 2400	3	C	4	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151508-01	GUARD	3	B	5	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151509-01	SPACER,SLIDE	3	A	6	2.000	1.000	EA	B	YN	2.000	0	0		00/00/00	99/99/99
9151510-01	SLIDE BATTERY MODULE	3	A	7	2.000	1.000	EA	B	YN	2.000	0	0		00/00/00	99/99/99
9151590-01	FRAME FILTER	3	A	8	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151591-01	COVER,FILTER	3	A	9	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151515-01	BRACKET COVER	3	A	10	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151517-01	BRACKET,SUPPORT	3	A	12	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151521-01	BAR,STIFFENER	3	A	13	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151522-01	AIR TUNNEL	3	A	14	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9980088-01	LABEL-DANGER HIGH VOLTC	3	B	15	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151525-01	HOUSING-CAPACITOR	3	A	17	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151526-01	TRAY-CAPACITOR	3	A	18	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151527-01	CENTER SHIELD	3	A	19	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151589-01	PLATE, FAN	3	A	20	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151529-01	BOX EMI FILTER	3	D	21	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151514-01	FILTER	3	B	22	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151531-01	BRACKET SYSTEM CONN	3	B	23	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151519-01	PIN,SHEAR	3	A	24	2.000	1.000	EA	B	YN	2.000	0	0		00/00/00	99/99/99
9151545-01	BLOCK	3	A	25	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151709-01	PLATE,MTG,J4,GUPS2400	3	B	26	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
5151626-01	OUTPUT XFMR ASSY-FINAL	3	C	27	1.000	1.000	EA	M	YN	1.000	0	0		00/00/00	99/99/99
856-350-81	CONN,6PIN,PANEL,10A MAX	3	A	28	.000	1.000	EA	B	YN	.000	0	0		00/00/00	99/99/99
5151564-01	PWA,BATTERY INTERFACE	3	B	29	1.000	1.000	EA	M	YN	1.000	0	0		00/00/00	99/99/99
5151563-01	PWA,OUTPUT FILTER	3	E	30	1.000	1.000	EA	M	YN	1.000	0	0		00/00/00	99/99/99
5151561-01	PWA,BATTERY CHARGER	3	C	31	1.000	1.000	EA	M	YN	1.000	0	0		00/00/00	99/99/99
5151592-01	DISPLAY PANEL ASSEMBLY	3	A	32	1.000	1.000	EA	X	YN	1.000	0	0		00/00/00	99/99/99
856-350-74	CONTACT,SOCKET,14AWG,10A	3	A	33	.000	1.000	EA	B	YN	.000	0	0		00/00/00	99/99/99
109-961-2X	SEALANT LOCTITE #222 S	3	A	36	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
109-309-2X	HOLE PLUG 1/2"NYLON SMI A	3		37	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
863-401-XX	HANDLE 4" OVAL BLK A	3	A	38	2.000	1.000	EA	B	YN	2.000	0	0		00/00/00	99/99/99
109-632-07	STANDOFF 636X.44RD.25 SS	3	A	39	4.000	1.000	EA	B	YN	4.000	0	0		00/00/00	99/99/99
1131218-99	WIRE MS 18 600V WHT A	3		40	.000	1.000	FT	F	YN	.000	0	0	AR	00/00/00	99/99/99
880-SE5-0A	LINE FILTER 250VAC 50A	3		41	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
826-153-25	CAP, 15000UF,250V,ELEC,RA	3	C	42	2.000	1.000	EA	B	YN	2.000	0	0	C1,2	00/00/00	99/99/99
853-MA2-B4	FAN 6.0" 120AC 240CFM A	3	A	43	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
852-050-2P	CIRCUIT BKR 29 400HZ 50A	3	A	44	1.000	1.000	EA	B	YN	1.000	0	0	CB1	00/00/00	99/99/99
995-431-29	SLEEVING, 1.0",SHRINK	3	-	45	.000	1.000	IN	F	YN	.000	0	0	AR	00/00/00	99/99/99

BILL OF MATERIAL

AS OF 03/17/94

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 109 FGI

5151500-01 OPCODE: 0 REV: F BASE CHASSIS ASSY
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

OP: ORDER POLICY CODE
REQ: N=PART OPTIONAL
Y=PART REQUIRED
PF: N=PART DOES NOT PRINT ON SALES ORDER
Y=PART PRINTS ON SALES ORDER W/O PRICE
P=PART PRINTS ON SALES ORDER WITH PRICE

PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQF	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
109-961-26	RTV,RUBBER CMPD,CLEAR	3	A	46	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
6151500-01	WIRE DIAGRAM MSS-3	3	B	47	.000	1.000	EA	B	YN	.000	0	0		00/00/00	99/99/99
858-HPC-2X	PANEL MT FUSE HOLDER HP A	3	B	48	1.000	1.000	EA	B	YN	1.000	0	0	AR	00/00/00	99/99/99
858-KLM-30	FUSE,FAST 30A 500VDC	3	B	49	1.000	1.000	EA	B	YN	1.000	0	0	AR	00/00/00	99/99/99
107-240-11	RING LUG 16-14GA #1/4 S A	3		50	2.000	1.000	EA	F	YN	2.000	0	0	AR	00/00/00	99/99/99
9151655-01	INSULATOR CAP LG	3	A	51	2.000	1.000	EA	B	YN	2.000	0	0	C4-6	00/00/00	99/99/99
822-473-30	CAP, .047UF,250V,20%,FILM	3	A	52	3.000	1.000	EA	B	YN	3.000	0	0	C4-6	00/00/00	99/99/99
9151594-01	INSULATOR,BATT CHGR BD	3	B	53	1.000	1.000	EA	B	YN	1.000	0	0	.	00/00/00	99/99/99
9151595-01	INSULATOR,RECTIFIER	3	B	54	1.000	1.000	EA	B	YN	1.000	0	0	.	00/00/00	99/99/99
9151596-01	INSULATOR,CONTROL BD	3	B	55	1.000	1.000	EA	B	YN	1.000	0	0	.	00/00/00	99/99/99
800-320-20	MOV, 320V, 160 JOULES	3	A	56	3.000	1.000	EA	B	YN	3.000	0	0	VR1-3	00/00/00	99/99/99
9151631-01	INSULATOR,GUPS2400	3	A	57	1.000	1.000	EA	B	YN	1.000	0	0	.	00/00/00	99/99/99
112HB10-01	NUT 1/4-20 STD HEX BRAS A	3		61	6.000	1.000	EA	F	YN	6.000	0	0	.	00/00/00	99/99/99
110DA20-06	SCREW 6-32X3/8 PPH S/S	3	A	62	4.000	1.000	EA	F	YN	4.000	0	0	.	00/00/00	99/99/99
110CA20-08	SCREW 4-40X1/2 PPH SS	3		63	4.000	1.000	EA	F	YN	4.000	0	0	.	00/00/00	99/99/99
9950511-03	WIRE, #18,COPPER,TINNED	3	-	64	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
995-431-27	SLEEVING, .187,SHRINK,B	3	A	65	.000	1.000	FT	F	YN	.000	0	0	AR	00/00/00	99/99/99
107-240-03	RING LUG 22-16GA #1/4 S A	3		66	4.000	1.000	EA	F	YN	4.000	0	0	.	00/00/00	99/99/99
9151619-01	INSULATOR TOROID	3	A	69	1.000	1.000	EA	B	YN	1.000	0	0	.	00/00/00	99/99/99
9151656-01	INSULATOR CAP SM	3	A	70	2.000	1.000	EA	B	YN	2.000	0	0	.	00/00/00	99/99/99
9151618-01	INSULATOR,CAPACITOR	3	A	71	1.000	1.000	EA	B	YN	1.000	0	0	.	00/00/00	99/99/99
9151614-01	INSULATOR OUTPUT FLTR	3	A	72	1.000	1.000	EA	B	YN	1.000	0	0	.	00/00/00	99/99/99
109-204-18	SCREW LOCK ASSY,4-40, .312LONG	3	C	73	2.000	1.000	ST	B	YN	2.000	0	0	.	00/00/00	99/99/99
5152123-01	CBL 2,AC INPUT	3	A	74	1.000	1.000	EA	M	YN	1.000	0	0	.	00/00/00	99/99/99
5151642-01	CBL 1,AC INPUT	3	A	76	1.000	1.000	EA	M	YN	1.000	0	0	.	00/00/00	99/99/99
5151643-01	CABLE,DC SENSE	3	B	77	1.000	1.000	EA	M	YN	1.000	0	0	.	00/00/00	99/99/99
5151644-01	CABLE,FAN	3	B	78	1.000	1.000	EA	M	YN	1.000	0	0	.	00/00/00	99/99/99
5151646-01	CABLE,AC FEEDBACK	3	B	79	1.000	1.000	EA	M	YN	1.000	0	0	.	00/00/00	99/99/99
H151638-01	HARNESS, CHAS SIGNAL	3	B	80	1.000	1.000	EA	M	YN	1.000	0	0	.	00/00/00	99/99/99
1070400-04	LUG SOLDER #10 45 DEG A	3	A	82	4.000	1.000	EA	F	YN	4.000	0	0	.	00/00/00	99/99/99
804-433-05	RES, 43 K, 2W,5%	3		83	2.000	1.000	EA	B	YN	2.000	0	0	R1,R2	00/00/00	99/99/99
9950511-04	SLEEVING, #20,TFE	3	-	84	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
5151636-01	CBL,OUTPUT J3	3	A	85	1.000	1.000	EA	M	YN	1.000	0	0	J3	00/00/00	99/99/99
H151633-01	HARNESS,SWITCHED AC	3	A	86	1.000	1.000	EA	M	YN	1.000	0	0		00/00/00	99/99/99
H151634-02	HARNESS,DCBUS GUPS2400U	3	B	87	1.000	1.000	EA	M	YN	1.000	0	0		00/00/00	99/99/99
111DA20-01	WASHER #6 FLAT S/S	3		88	42.000	1.000	EA	F	YN	42.000	0	0		00/00/00	99/99/99
111DC20-01	WASHER #6 SPLIT LK S/S	3		89	38.000	1.000	EA	F	YN	38.000	0	0		00/00/00	99/99/99
111EA20-01	WASHER #8 FLAT S/S	3		90	18.000	1.000	EA	F	YN	18.000	0	0		00/00/00	99/99/99
111EC20-01	WASHER #8 SPLIT LK S/S	3		91	14.000	1.000	EA	B	YN	14.000	0	0		00/00/00	99/99/99
111CA20-01	WASHER #4 FLAT S/S	3		92	16.000	1.000	EA	F	YN	16.000	0	0		00/00/00	99/99/99
111CC20-01	WASHER #4 SPLIT LK S/S	3		93	16.000	1.000	EA	F	YN	16.000	0	0		00/00/00	99/99/99

BILL OF MATERIAL

AS OF 03/17/94

CLASS CODE GROUP: 1 COMMODITY CLASS
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5151500-01 OPCODE: 0 REV: F BASE CHASSIS ASSY
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQF	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
110CA20-05	SCREW 4-40X5/16 PPH SS	3		94	10.000	1.000	EA	F	YN	10.000	0	0		00/00/00	99/99/99
112EB20-01	NUT 8-32 HEX SST	3		95	4.000	1.000	EA	F	YN	4.000	0	0		00/00/00	99/99/99
112DB20-01	NUT 6-32 HEX STD SST A	3		96	8.000	1.000	EA	F	YN	8.000	0	0		00/00/00	99/99/99
110EA20-06	SCR #8-32 X 3/8 PPH S/STL	3		97	4.000	1.000	EA	F	YN	4.000	0	0		00/00/00	99/99/99
110DA20-08	SCREW 6-32X1/2 PPH S/S	3		98	16.000	1.000	EA	F	YN	16.000	0	0		00/00/00	99/99/99
110EG20-08	SCREW 8-32X.50 PFH S/S	3		99	20.000	1.000	EA	F	YN	20.000	0	0		00/00/00	99/99/99
110DA20-07	SCREW 6-32X7/16 PPH SS	3		100	10.000	1.000	EA	F	YN	10.000	0	0		00/00/00	99/99/99
110DG20-05	SCREW 6-32X.31 SST 100D A	3		101	28.000	1.000	EA	F	YN	28.000	0	0		00/00/00	99/99/99
110DG20-08	SCREW 6-32C1/2 PFH 100	3		102	19.000	1.000	EA	F	YN	19.000	0	0		00/00/00	99/99/99
110EG20-05	SCR,8-32PFH,100DEGSS.31LG	3		103	3.000	1.000	EA	F	YN	3.000	0	0		00/00/00	99/99/99
110EG20-06	SCREW 8-32 X .37 100 PFH	3		104	3.000	1.000	EA	F	YN	3.000	0	0		00/00/00	99/99/99
110DG20-06	SCR 6-32X3/8 PFH 100DEG A	3		105	18.000	1.000	EA	F	YN	18.000	0	0		00/00/00	99/99/99
110DA20-10	SCR 6-32X.625 PPH SS	3	A	106	8.000	1.000	EA	F	YN	8.000	0	0		00/00/00	99/99/99
110EA20-09	SCR 8-32X.562 PPH SS	3		107	10.000	1.000	EA	B	YN	10.000	0	0		00/00/00	99/99/99
112CB20-01	NUT 4-40 HEX STD S/S	3		108	6.000	1.000	EA	F	YN	6.000	0	0		00/00/00	99/99/99
112GB20-01	NUT 10-32 STD HEX SS	3		109	4.000	1.000	EA	F	YN	4.000	0	0		00/00/00	99/99/99
111FC20-01	WASHER 10SPLIT LK	3		110	4.000	1.000	EA	F	YN	4.000	0	0		00/00/00	99/99/99
111FA20-01	WASHER #10 FLAT A	3		111	4.000	1.000	EA	F	YN	4.000	0	0		00/00/00	99/99/99
110DG20-07	SCREW 6-32X7/16 PFH 100	3		114	4.000	1.000	EA	F	YN	4.000	0	0		00/00/00	99/99/99
896-TY2-5M	EXP. TYRAP TY25M/WRN-6 P	3		121	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
110DA20-01	SCREW 6-32 X .75 PPH SSTA	3		124	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
110GH20-06	SCR 10-32X.38 SBH SS	3		125	4.000	1.000	EA	F	YN	4.000	0	0	L1,2	00/00/00	99/99/99
5151641-01	WIRE KIT GUPS2400 CHAS	3	A	126	1.000	1.000	10	M	YN	1.000	0	0	L1,2	00/00/00	99/99/99
896-ABM-1M	TIE MNT,CBL,.5 SQ NYLON	3	A	127	2.000	1.000	EA	B	YN	2.000	0	0		00/00/00	99/99/99
W151633-01	W/L,SW,AC INPUT	3	A	128	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
W151634-02	W/L,DC BUS,GUPS2400U	3	B	129	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
W151638-01	W/L CHAS SIGNAL	3	B	130	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
W151639-01	WIRELIST, XFMR ASSY	3	A	131	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
W151641-01	W/L,MISC GUPS2400	3	B	132	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99

ASSY PART NO.	TITLE	SHT. 1 OF 4	REV.	ELGAR
5151559-01	PWA, RECTIFIER	SHT. ___ IS ___ SIZE	F	

DRAWN J.WESTERFIELD	DATE 7-15-92	PROJ. ENG. D. Paul	DATE 7/15/92
CHECKED Paul	DATE 7/15/92	QA-REL. Timothy Cook	DATE 9/20/15

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	X								PRODUCTION RELEASE PER DRN R0355	JW	DRP	Paul	7/15/92
B	■								REVISED PER ECN #8345	Drew	STAPP	A Stapp	3-23-94
C	■								REVISED PER ECN# 8375A	Drew	STAPP	A Stapp	3-23-94
D	■								REVISED PER ECN# 8385	Drew	STAPP	A. Stapp	3-23-94
E	■								REVISED PER ECN# 8397	Drew	STAPP	A. Stapp	3-23-94
F	■								REVISED PER ECN# 8479A	Drew	STAPP	A Stapp	3-23-94

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X									GUPS2400
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

DISTRIBUTION JOANW -

BILL OF MATERIAL
AS OF 03/22/94

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 110 SUB-ASSY MISC

5151559-01 OPCODE: 3 REV: F PWA,RECTIFIER BD
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

OP: ORDER POLICY CODE
REQ: N=PART OPTIONAL
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PF: N=PART DOES NOT PRINT ON SALES ORDER
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PART NUMBER	DESCRIPTION	OP	RV	ITEM NO	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REP QF	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
9151559-01	PWB,RECTIFIER BD	3	B	1	1.000	1.000	EA	B	YN	1.000	0	0	.	00/00/00	99/99/99
6151559-01	SCHEM RECTIFIER BD	3	D	2	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
2151559-01	A/W, RECTIFIER PWB	3	C	3	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
801-202-05	RES, 2 K, 1/4W,2%,M-F	3		4	1.000	1.000	EA	B	YN	1.000	0	0	R54	00/00/00	99/99/99
801-101-05	RES, 100 OHM,1/4W,2%,M-F	3		5	8.000	1.000	EA	B	YN	8.000	0	0	R15,16,37,40,43,45,57,59	00/00/00	99/99/99
801-103-05	RES, 10 K, 1/4W,2%,M-F	3		6	3.000	1.000	EA	B	YN	3.000	0	0	R5,28,71	00/00/00	99/99/99
801-102-05	RES, 1 K, 1/4W,2%,M-F	3		7	2.000	1.000	EA	B	YN	2.000	0	0	R14,61	00/00/00	99/99/99
801-203-05	RES, 20 K, 1/4W,2%,M-F	3		9	1.000	1.000	EA	B	YN	1.000	0	0	R4	00/00/00	99/99/99
801-201-05	RES, 200 OHM,1/4W,2%,M-F	3		10	1.000	1.000	EA	B	YN	1.000	0	0	R62	00/00/00	99/99/99
801-223-05	RES, 22 K, 1/4W,2%,M-F	3		11	1.000	1.000	EA	B	YN	1.000	0	0	R41	00/00/00	99/99/99
801-683-05	RES, 68 K, 1/4W,2%,M-F	3		12	1.000	1.000	EA	B	YN	1.000	0	0	R10	00/00/00	99/99/99
801-225-05	RES, 2.2 M, 1/4W,5%,M-F	3		13	1.000	1.000	EA	B	YN	1.000	0	0	R22	00/00/00	99/99/99
813-357-1F	RES, 3.57 K, 1/8W,1%,M-F	3		15	1.000	1.000	EA	B	YN	1.000	0	0	R18	00/00/00	99/99/99
801-474-05	RES, 470 K, 1/4W,2%,M-F	3		16	2.000	1.000	EA	B	YN	2.000	0	0	R31,53	00/00/00	99/99/99
812-280-3F	RES, 280 K, 1/10W,1%,M-F	3		17	1.000	1.000	EA	B	YN	1.000	0	0	R19	00/00/00	99/99/99
801-682-05	RES, 6.8 K, 1/4W,2%,M-F	3		19	1.000	1.000	EA	B	YN	1.000	0	0	R70	00/00/00	99/99/99
803-100-05	RES, 10 OHM,1W,5%	3		20	2.000	1.000	EA	B	YN	2.000	0	0	R38,46	00/00/00	99/99/99
803-470-05	RES, 47 OHM,1W,5%	3		22	2.000	1.000	EA	B	YN	2.000	0	0	R56,58	00/00/00	99/99/99
804-270-05	RES, 27 OHM,2W,5%	3		24	4.000	1.000	EA	B	YN	4.000	0	0	R36,39,42,44	00/00/00	99/99/99
809-050-EG	RES, 50 OHM,20W,5%,W-W	3	A	25	1.000	1.000	EA	B	YN	1.000	0	0	R60	00/00/00	99/99/99
812-261-1F	RES, 2.61 K, 1/10W,1%,M-F	3		27	1.000	1.000	EA	B	YN	1.000	0	0	R20	00/00/00	99/99/99
812-523-1F	RES, 5.23 K, 1/10W,1%,M-F	3		28	1.000	1.000	EA	B	YN	1.000	0	0	R2	00/00/00	99/99/99
812-357-1F	RES, 3.57 K, 1/10W,1%,M-F	3		30	1.000	1.000	EA	B	YN	1.000	0	0	R30	00/00/00	99/99/99
812-715-2F	RES, 71.5 K, 1/10W,1%,M-F	3		32	1.000	1.000	EA	B	YN	1.000	0	0	R13	00/00/00	99/99/99
812-150-2F	RES, 15 K, 1/10W,1%,M-F	3		33	3.000	1.000	EA	B	YN	3.000	0	0	R11,12,55	00/00/00	99/99/99
812-100-3F	RES, 100 K, 1/10W,1%,M-F	3		38	2.000	1.000	EA	B	YN	2.000	0	0	R1,6	00/00/00	99/99/99
813-475-3F	RES, 475 K, 1/8W,1%,M-F	3		39	1.000	1.000	EA	B	YN	1.000	0	0	R21	00/00/00	99/99/99
812-562-3F	RES, 562 K, 1/10W,1%,M-F	3		40	1.000	1.000	EA	B	YN	1.000	0	0	R7	00/00/00	99/99/99
818-102-25	RESNET, 1 K,2%,8P,7RES,SI	3	B	42	1.000	1.000	EA	B	YN	1.000	0	0	R74	00/00/00	99/99/99
818-103-SP	RESNET, 10 K,2%,10P,9R,SI	3	C	44	1.000	1.000	EA	B	YN	1.000	0	0	R72	00/00/00	99/99/99
818-103-25	RESNET, 10 K,2%,8P,4RES,S	3	B	46	2.000	1.000	EA	B	YN	2.000	0	0	R73,75	00/00/00	99/99/99
821-102-CK	CAP, 1000PF,200V,10%,CER	3	B	50	3.000	1.000	EA	B	YN	3.000	0	0	C10,11,24	00/00/00	99/99/99
821-103-CK	CAP, .01UF,50V,10%,CER	3	B	51	7.000	1.000	EA	B	YN	7.000	0	0	C4,15,17,19,20,25,26	00/00/00	99/99/99
821-104-CK	CAP, .10UF,50V,10%,CER	3	A	52	13.000	1.000	EA	B	YN	13.000	0	0	C7,9,14,23,29-35,37,38	00/00/00	99/99/99
822-104-MP	CAP, .10UF,630V,10%,FILM	3	B	53	2.000	1.000	EA	B	YN	2.000	0	0	C16,21	00/00/00	99/99/99

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AS OF 03/22/94

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5151559-01 OPCODE: 3 REV: F PWA,RECTIFIER BD
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQ	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
821-105-CK	CAP, 1UF,50V,10%,CER	3	B	54	1.000	1.000	EA	B	YN	1.000	0	0	C8	00/00/00	99/99/99
821-471-CK	CAP, 470PF,200V,10%,CER	3	C	55	1.000	1.000	EA	B	YN	1.000	0	0	C5	00/00/00	99/99/99
823-106-21	CAP, 10UF,20V,10%,TANT	3	C	56	8.000	1.000	EA	B	YN	8.000	0	0	C1,3,12,13,18,22,28,36	00/00/00	99/99/99
824-107-25	CAP, 100UF,25V,ELEC,RAD	3	A	57	2.000	1.000	EA	B	YN	2.000	0	0	C2,27	00/00/00	99/99/99
823-336-51	CAP, 33UF,25V,10%,TANT	3	E	59	1.000	1.000	EA	B	YN	1.000	0	0	C6	00/00/00	99/99/99
833-MPS-A0	TRAN, NPN,70V,MPSA06	3	A	60	2.000	1.000	EA	B	YN	2.000	0	0	Q1,2	00/00/00	99/99/99
832-P29-07	TRAN, PNP,50V,PN2907	3	D	62	5.000	1.000	EA	B	YN	5.000	0	0	Q3,5,6,11,12	00/00/00	99/99/99
842-700-0X	FET, N-CHAN,60A,2N7000	3	B	64	1.000	1.000	EA	B	YN	1.000	0	0	Q4	00/00/00	99/99/99
842-TN4-01	FET, N-CHAN,TN040IL,40V,6	3	A	65	4.000	1.000	EA	B	YN	4.000	0	0	Q7-10	00/00/00	99/99/99
845-400-4X	RECT, 400V,1A,1N4004	3	B	68	2.000	1.000	EA	B	YN	2.000	0	0	D1,2	00/00/00	99/99/99
843-473-8X	DIODE, ZENER,8.2V,1W,10%	3	A	69	1.000	1.000	EA	B	YN	1.000	0	0	D27	00/00/00	99/99/99
844-414-8X	DIODE, SIGNAL,100V,SWITCH	3	B	70	7.000	1.000	EA	B	YN	7.000	0	0	D3,21-26	00/00/00	99/99/99
845-FEP-30	DIODE,DUAL,600V,30A,TO-3P	3	D	71	1.000	1.000	EA	B	YN	1.000	0	0	D20	00/00/00	99/99/99
843-474-4A	DIODE, ZENER,15V,1W,5%	3	B	72	2.000	1.000	EA	B	YN	2.000	0	0	D4,28	00/00/00	99/99/99
845-IRK-56	RECT, PWR,DUAL,600V,45A	3	D	73	1.000	1.000	EA	B	YN	1.000	0	0	D9	00/00/00	99/99/99
845-493-6X	RECT, 400V,1A,1N4936	3	C	74	10.000	1.000	EA	B	YN	10.000	0	0	D5,6,7,10,11,13-17	00/00/00	99/99/99
846-IRK-56	SCR, DUAL,600V,55A	3	D	76	2.000	1.000	EA	B	YN	2.000	0	0	D8,12	00/00/00	99/99/99
846-BTW-69	SCR, PWR 600V,55A	3	A	78	2.000	1.000	EA	B	YN	2.000	0	0	D18,19	00/00/00	99/99/99
849-101-4C	QUAD PRECISION OP AMP	3	B	86	1.000	1.000	EA	B	YN	1.000	0	0	U2	00/00/00	99/99/99
849-401-06	CMOS CD40106BE HEX-SCHM A	3	C	88	1.000	1.000	EA	B	YN	1.000	0	0	U4	00/00/00	99/99/99
849-555-XC	LIN 555C TIMER A	3	B	90	1.000	1.000	EA	B	YN	1.000	0	0	U8	00/00/00	99/99/99
849-AD7-37	CONVERTER RMS TO DC	3	A	92	1.000	1.000	EA	B	YN	1.000	0	0	U1	00/00/00	99/99/99
849-C40-50	CMOS CD4050BE HEX BUFF A	3	B	94	1.000	1.000	EA	B	YN	1.000	0	0	U7	00/00/00	99/99/99
849-C40-81	CMOS CD4081BE 4X2IN AN A	3	B	96	1.000	1.000	EA	B	YN	1.000	0	0	U6	00/00/00	99/99/99
849-LM3-31	CONVERTER,VOLT TO FREQ	3	A	98	1.000	1.000	EA	B	YN	1.000	0	0	U3	00/00/00	99/99/99
849-LM3-39	LIN LM339N QUAD-COM A	3	B	100	1.000	1.000	EA	B	YN	1.000	0	0	U5	00/00/00	99/99/99
5151587-01	AC MONITOR XFMR	3	A	102	1.000	1.000	EA	B	YN	1.000	0	0	T1	00/00/00	99/99/99
5151582-01	XFMR,SCR GATE DRIVE	3	B	103	4.000	1.000	EA	B	YN	4.000	0	0	T2-5	00/00/00	99/99/99
856-011-0V	CONN,POWER 8P MALE RANGLE	3	B	105	1.000	1.000	EA	B	YN	1.000	0	0	J1	00/00/00	99/99/99
856-RAF-08	CONN,FEMALE 8POS R-ANGLE	3	B	107	1.000	1.000	EA	B	YN	1.000	0	0	J2	00/00/00	99/99/99
856-201-7M	CONN M 20POS 2ROW RIBBON	3	A	110	1.000	1.000	EA	B	YN	1.000	0	0	J3	00/00/00	99/99/99
109-834-01	DISCONNECT TAB,-110 ST	3	A	112	8.000	1.000	EA	B	YN	8.000	0	0	E1-8	00/00/00	99/99/99
9151576-01	FET BAR, RECTIFIER	3	A	120	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151577-01	INSUL,FET,RECTIFIER	3	A	121	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151578-01	CLIP,RESISTOR	3	A	122	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
110DA20-07	SCREW 6-32X7/16 PPH SS	3		124	12.000	1.000	EA	F	YN	12.000	0	0		00/00/00	99/99/99
110DA20-08	SCREW 6-32X1/2 PPH S/S	3		125	6.000	1.000	EA	F	YN	6.000	0	0		00/00/00	99/99/99

BILL OF MATERIAL

AS OF 03/22/94

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 110 SUB-ASSY MISC

OP: ORDER POLICY CODE
REQ: N=PART OPTIONAL
Y=PART REQUIRED
PF: N=PART DOES NOT PRINT ON SALES ORDER
Y=PART PRINTS ON SALES ORDER W/O PRICE
P=PART PRINTS ON SALES ORDER WITH PRICE

5151559-01 OPCODE: 3 REV: F PWA,RECTIFIER BD
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQ	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
111DC20-01	WASHER #6 SPLIT LK S/S	3		126	12.000	1.000	EA	F	YN	12.000	0	0		00/00/00	99/99/99
111DG20-01	WASHER #6 FLAT SML OD A	3		127	12.000	1.000	EA	F	YN	12.000	0	0		00/00/00	99/99/99
110-M51-2M	SCR,M5X0.8X12MM SS METER	3		129	9.000	1.000	EA	B	YN	9.000	0	0		00/00/00	99/99/99
111FC20-01	WASHER 10SPLIT LK	3		130	9.000	1.000	EA	F	YN	9.000	0	0		00/00/00	99/99/99
111FA20-01	WASHER #10 FLAT A	3		131	9.000	1.000	EA	F	YN	9.000	0	0		00/00/00	99/99/99
110CA20-08	SCREW 4-40X1/2 PPH SS	3		132	7.000	1.000	EA	F	YN	7.000	0	0		00/00/00	99/99/99
111CC20-01	WASHER #4 SPLIT LK S/S	3		133	9.000	1.000	EA	F	YN	9.000	0	0		00/00/00	99/99/99
111CA20-01	WASHER #4 FLAT S/S	3		134	9.000	1.000	EA	F	YN	9.000	0	0		00/00/00	99/99/99
111CF80-01	SHLDR WSHR,4.25 O.D .12ID	3	A	135	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
111CA80-01	WASHER #4 FIBER A	3		136	4.000	1.000	EA	F	YN	4.000	0	0		00/00/00	99/99/99
112CA20-01	NUT #4-40 HEX S/S	3		137	4.000	1.000	EA	F	YN	4.000	0	0		00/00/00	99/99/99
109-T24-7X	SILPAD INSULATOR TO247	3	A	140	3.000	1.000	EA	B	YN	3.000	0	0		00/00/00	99/99/99
9151539-01	HEATSINK,RECTIFIER BD	3	A	141	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
5151652-01	WIRE KIT RECTIFIER BD	3	A	142	1.000	1.000	EA	M	YN	1.000	0	0		00/00/00	99/99/99
W151652-01	WIRELIST RECTIFIER BD	3	A	143	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
111DC20-01	WASHER #6 SPLIT LK S/S	3		144	6.000	1.000	EA	F	YN	6.000	0	0		00/00/00	99/99/99
111DA20-01	WASHER #6 FLAT S/S	3		146	6.000	1.000	EA	F	YN	6.000	0	0		00/00/00	99/99/99
110CA20-06	SCREW 4-40X3/8 PPH S/S	3		148	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
109-632-88	SPACER 632X1.187F/F HEX	3	A	149	4.000	1.000	EA	B	YN	4.000	0	0	AR	00/00/00	99/99/99
T151559-01	TP,RECTIFIER PWA	3	C	175	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
109-962-03	HUMISEAL SPRAY S	3	B	300	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
109-499-45	ADHESIVE GEL 499	3	A	301	.000	1.000	OZ	F	YN	.000	0	0	A/R	00/00/00	99/99/99
109-499-46	ACTIVATOR 710 USE W/499	3	A	303	.000	1.000	OZ	F	YN	.000	0	0	A/R	00/00/00	99/99/99
109-961-22	THERMAL COMPOUND	3	A	304	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99

ASSY PART NO.	TITLE	SHT. 1 OF 5	REV.	ELGAR
5151562-01	PWA, CONTROL	SHT. IS SIZE	K	

DRAWN J. WESTERFIELD	DATE 10/6/92	PROJ. ENG.	DATE 10/15/92
CHECKED	DATE 10/19/92	QA-REL.	DATE 10/15/92

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
C									PRODUCTION RELEASE IAW DRN R0400	JW			10/19/92
D									REVISED PER ECN 8462		STAPP		3-23-94
E									REVISED PER ECN 8489		STAPP		3-23-94
F									REVISED PER ECN 8549A		STAPP		3-23-94
G									REVISED PER ECN 8620		STAPP		3-23-94
H									REVISED PER ECN 8658		STAPP		3-23-94
J									REVISED PER ECN 8688B		STAPP		3-23-94
K									REVISED PER ECN 8904A		STAPP		3-23-94

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X									GUPS2400
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

1001030-01

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 110 SUB-ASSY MISC

5151562-01 OPCODE: 3 REV: K PWA,CONTROL
MODEL:
ECO NO:
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9151562-01	PWB,CONTROL	3	A	1	1.000	1.000	EA	B	YN	1.000	0	0	REF	00/00/00	99/99/99
6151562-01	SCHEMATIC,CONTROL	3	E	2	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
2151562-01	A/W,CONTROL	3	A	3	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
801-102-05	RES, 1 K, 1/4W,2%,M-F	3		4	12.000	1.000	EA	B	YN	12.000	0	0	R16,19,23, 27,39,40,5 1,75,87,89 ,102,104	00/00/00	99/99/99
801-101-05	RES, 100 OHM,1/4W,2%,M-F	3		5	2.000	1.000	EA	B	YN	2.000	0	0	R38,108	00/00/00	99/99/99
801-103-05	RES, 10 K, 1/4W,2%,M-F	3		6	10.000	1.000	EA	B	YN	10.000	0	0	R45,47,49, 54,65,68,7 6,80,82,10 1	00/00/00	99/99/99
801-104-05	RES, 100 K, 1/4W,2%,M-F	3		7	6.000	1.000	EA	B	YN	6.000	0	0	R41,44,55, 69-71,	00/00/00	99/99/99
801-105-05	RES, 1 M, 1/4W,2%,M-F	3		8	1.000	1.000	EA	B	YN	1.000	0	0	R43	00/00/00	99/99/99
801-102-05	RES, 1 K, 1/4W,2%,M-F	3		9	1.000	1.000	EA	B	YN	1.000	0	0	R110	00/00/00	99/99/99
801-204-05	RES, 200 K, 1/4W,2%,M-F	3		11	1.000	1.000	EA	B	YN	1.000	0	0	R15	00/00/00	99/99/99
801-220-05	RES, 22 OHM,1/4W,2%,M-F	3		16	1.000	1.000	EA	B	YN	1.000	0	0	R84	00/00/00	99/99/99
801-392-05	RES, 3.9 K, 1/4W,2%,M-F	3		18	1.000	1.000	EA	B	YN	1.000	0	0	R88	00/00/00	99/99/99
801-512-05	RES, 5.1 K, 1/4W,2%,M-F	3		20	1.000	1.000	EA	B	YN	1.000	0	0	R91	00/00/00	99/99/99
801-513-05	RES, 51 K, 1/4W,2%,M-F	3		22	2.000	1.000	EA	B	YN	2.000	0	0	R78,79	00/00/00	99/99/99
801-561-05	RES, 560 OHM,1/4W,2%,M-F	3		23	1.000	1.000	EA	B	YN	1.000	0	0	R90	00/00/00	99/99/99
801-822-05	RES, 8.2 K, 1/4W,2%,M-F	3		28	1.000	1.000	EA	B	YN	1.000	0	0	R56	00/00/00	99/99/99
801-223-05	RES, 22 K, 1/4W,2%,M-F	3		32	2.000	1.000	EA	B	YN	2.000	0	0	R32,52	00/00/00	99/99/99
801-330-05	RES, 33 OHM,1/4W,2%,M-F	3		33	1.000	1.000	EA	B	YN	1.000	0	0	R109	00/00/00	99/99/99
801-222-05	RES, 2.2 K, 1/4W,2%,M-F	3		34	4.000	1.000	EA	B	YN	4.000	0	0	R28,29,67, 85	00/00/00	99/99/99
801-472-05	RES, 4.7 K, 1/4W,2%,M-F	3		35	3.000	1.000	EA	B	YN	3.000	0	0	R30,31,100	00/00/00	99/99/99
801-391-05	RES, 390 OHM,1/4W,2%,M-F	3		36	3.000	1.000	EA	B	YN	3.000	0	0	R72,98,99	00/00/00	99/99/99
801-332-05	RES, 3.3 K, 1/4W,2%,M-F	3		37	3.000	1.000	EA	B	YN	3.000	0	0	R46,50,95	00/00/00	99/99/99
802-102-05	RES, 1 K, 1/2W,2%,M-F	3		38	1.000	1.000	EA	B	YN	1.000	0	0	R94	00/00/00	99/99/99
802-103-05	RES, 10 K, 1/2W,2%,M-F	3		39	1.000	1.000	EA	B	YN	1.000	0	0	R106	00/00/00	99/99/99
802-564-05	RES, 560 K, 1/2W,2%,M-F	3		40	1.000	1.000	EA	B	YN	1.000	0	0	R66	00/00/00	99/99/99
803-221-05	RES, 220 OHM,1W,5%	3		41	1.000	1.000	EA	B	YN	1.000	0	0	R107	00/00/00	99/99/99
804-823-05	RES, 82 K, 2W,5%	3		42	1.000	1.000	EA	B	YN	1.000	0	0	R77	00/00/00	99/99/99
804-1R0-05	RES, 1 OHM,2W,5%	3		43	1.000	1.000	EA	B	YN	1.000	0	0	R86	00/00/00	99/99/99
803-0R1-0F	RES 0.1 OHM,1.0%,1W	3	A	44	1.000	1.000	EA	B	YN	1.000	0	0	R1	00/00/00	99/99/99
807-202-05	5W W/W 5% CW5 2KR DALE A	3		45	1.000	1.000	EA	B	YN	1.000	0	0	R83	00/00/00	99/99/99
807-5R6-05	RES, 5.6 OHM,5W,5%,W-W	3		46	1.000	1.000	EA	B	YN	1.000	0	0	R105	00/00/00	99/99/99
812-100-1F	RES, 1 K, 1/10W,1%,M-F	3		49	2.000	1.000	EA	B	YN	2.000	0	0	R53,93	00/00/00	99/99/99
812-422-1F	RES, 4.22 K, 1/10W,1%,M-F	3		50	8.000	1.000	EA	B	YN	8.000	0	0	R6,8,21,	00/00/00	99/99/99

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 110 SUB-ASSY MISC

5151562-01 OPCODE: 3 REV: K PWA,CONTROL
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

OP: ORDER POLICY CODE
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PART NUMBER	DESCRIPTION	OP	RV	ITEM NO	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQ	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
812-422-1F	RES, 4.22 K, 1/10W,1%,M-F	3		50	8.000	1.000	EA	B	YN	8.000	0	0	22,25,26,96,97	00/00/00	99/99/99
812-221-1F	RES, 2.21 K, 1/10W,1%,M-F	3		51	1.000	1.000	EA	B	YN	1.000	0	0	R42	00/00/00	99/99/99
812-100-2F	RES, 10 K, 1/10W,1%,M-F	3		52	1.000	1.000	EA	B	YN	1.000	0	0	R4	00/00/00	99/99/99
812-100-4F	RES, 1 M, 1/10W,1%,M-F	3		53	4.000	1.000	EA	B	YN	4.000	0	0	R60,61,63,64	00/00/00	99/99/99
812-402-1F	RES,4.02K,1/10W,1%,M-F	3		54	1.000	1.000	EA	B	YN	1.000	0	0	R3	00/00/00	99/99/99
812-133-2F	RES, 13.3 K, 1/10W,1%,M-F	3		55	1.000	1.000	EA	B	YN	1.000	0	0	R59	00/00/00	99/99/99
812-31R-6F	RES, 31.6 OHM,1/10W,1%,M-	3		57	1.000	1.000	EA	B	YN	1.000	0	0	R2	00/00/00	99/99/99
812-499-2F	RES, 49.9 K, 1/10W,1%,M-F	3		58	1.000	1.000	EA	B	YN	1.000	0	0	R10	00/00/00	99/99/99
812-332-3F	RES, 332 K, 1/10W,1%,M-F	3		62	5.000	1.000	EA	B	YN	5.000	0	0	R33-37	00/00/00	99/99/99
812-383-1F	RES, 3.83 K, 1/10W,1%,M-F	3		67	1.000	1.000	EA	B	YN	1.000	0	0	R92	00/00/00	99/99/99
812-383-3F	RES, 383 K, 1/10W,1%,M-F	3		68	1.000	1.000	EA	B	YN	1.000	0	0	R103	00/00/00	99/99/99
812-750-3F	RES, 750 K, 1/10W,1%,M-F	3		69	2.000	1.000	EA	B	YN	2.000	0	0	R20,24	00/00/00	99/99/99
813-124-2F	RES, 12.4 K, 1/8W,1%,M-F	3		70	1.000	1.000	EA	B	YN	1.000	0	0	R11	00/00/00	99/99/99
812-750-1F	RES, 7.50 K, 1/10W,1%,M-F	3		72	1.000	1.000	EA	B	YN	1.000	0	0	R5	00/00/00	99/99/99
812-715-1F	RES, 7.15 K, 1/10W,1%,M-F	3		74	1.000	1.000	EA	B	YN	1.000	0	0	R81	00/00/00	99/99/99
813-200-2F	RES, 20 K, 1/8W,1%,M-F	3		75	1.000	1.000	EA	B	YN	1.000	0	0	R7	00/00/00	99/99/99
813-348-2F	RES, 34.8 K, 1/8W,1%,M-F	3		76	1.000	1.000	EA	B	YN	1.000	0	0	R62	00/00/00	99/99/99
813-715-2F	RES, 71.5 K, 1/8W,1%,M-F	3		78	2.000	1.000	EA	B	YN	2.000	0	0	R9,13	00/00/00	99/99/99
813-768-2F	RES, 76.8 K, 1/8W,1%,M-F	3		80	2.000	1.000	EA	B	YN	2.000	0	0	R12,14	00/00/00	99/99/99
816-301-3F	RES, 301 K, 1/2W,1%,M-F	3		84	2.000	1.000	EA	B	YN	2.000	0	0	R57,58	00/00/00	99/99/99
819-501-10	POT, 500 OHM	3	A	86	1.000	1.000	EA	B	YN	1.000	0	0	R48	00/00/00	99/99/99
821-102-CK	CAP, 1000PF,200V,10%,CER	3	B	90	9.000	1.000	EA	B	YN	9.000	0	0	C21,27-31,42,77,81	00/00/00	99/99/99
821-103-CK	CAP, .01UF,50V,10%,CER	3	B	92	6.000	1.000	EA	B	YN	6.000	0	0	C34,46,52,53,71,74	00/00/00	99/99/99
821-104-CK	CAP, .10UF,50V,10%,CER	3	A	94	22.000	1.000	EA	B	YN	22.000	0	0	C1-19,39,44,45	00/00/00	99/99/99
821-104-CK	CAP, .10UF,50V,10%,CER	3	A	95	12.000	1.000	EA	B	YN	12.000	0	0	C50,51,61,64,66,73,78-80,82-84	00/00/00	99/99/99
823-105-71	CAP, 1UF,50V,20%,TANT	3	D	96	1.000	1.000	EA	B	YN	1.000	0	0	C68	00/00/00	99/99/99
821-102-NP	CAP, 1000PF,50V,5%,CER	3	C	98	1.000	1.000	EA	B	YN	1.000	0	0	C69	00/00/00	99/99/99
822-473-63	CAP, .047UF,63V,5%,FILM	3	A	100	1.000	1.000	EA	B	YN	1.000	0	0	C24	00/00/00	99/99/99
822-103-PC	CAP, .01UF,100V,5%,FILM	3	A	101	2.000	1.000	EA	B	YN	2.000	0	0	C23,25	00/00/00	99/99/99
822-105-35	CAP, 1UF,35V,5%,FILM	3	A	104	3.000	1.000	EA	B	YN	3.000	0	0	C36,43,47	00/00/00	99/99/99
822-222-PC	CAP, 2200PF,63V,5%,FILM	3	A	105	1.000	1.000	EA	B	YN	1.000	0	0	C67	00/00/00	99/99/99
821-101-CK	CAP, 100PF,200V,10%,CER	3	B	106	5.000	1.000	EA	B	YN	5.000	0	0	C22,32,33,35,76	00/00/00	99/99/99
822-474-35	CAP, .47UF,35V,5%,FILM	3	A	108	1.000	1.000	EA	B	YN	1.000	0	0	C26	00/00/00	99/99/99

BILL OF MATERIAL

AS OF 03/22/94

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 110 SUB-ASSY MISC

5151562-01 OPCODE: 3 REV: K PWA,CONTROL
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

OP: ORDER POLICY CODE
REQ: N=PART OPTIONAL
Y=PART REQUIRED
PF: N=PART DOES NOT PRINT ON SALES ORDER
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PART NUMBER	DESCRIPTION	OP	RV	ITEM NO	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQ	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
822-104-PC	CAP, .10UF,63V,5%,FILM	3	A	109	2.000	1.000	EA	B	YN	2.000	0	0	C37,40	00/00/00	99/99/99
822-224-58	CAP, .22UF,600V,5%,FILM	3	B	111	1.000	1.000	EA	B	YN	1.000	0	0	C57	00/00/00	99/99/99
823-106-25	CAP, 10UF,25V,10%,TANT	3	B	112	3.000	1.000	EA	B	YN	3.000	0	0	C41,60,63	00/00/00	99/99/99
821-105-CK	CAP, 1UF,50V,10%,CER	3	B	113	1.000	1.000	EA	B	YN	1.000	0	0	C72	00/00/00	99/99/99
824-127-XX	CAP, 120UF,450V,ELEC,RAD	3	A	114	1.000	1.000	EA	B	YN	1.000	0	0	C48	00/00/00	99/99/99
824-107-51	CAP, 100UF,25V,ELEC,AXL	3	F	116	3.000	1.000	EA	B	YN	3.000	0	0	C54,55,62	00/00/00	99/99/99
824-566-35	CAP, 56UF,35V,ELEC,RAD	3		117	1.000	1.000	EA	B	YN	1.000	0	0	C56	00/00/00	99/99/99
822-684-53	CAP, .68UF,200V,5%,FILM	3	B	118	1.000	1.000	EA	B	YN	1.000	0	0	C58	00/00/00	99/99/99
824-108-2X	CAP, 1000UF,25V,ELEC,RAD	3	B	120	2.000	1.000	EA	B	YN	2.000	0	0	C59,65	00/00/00	99/99/99
821-471-CK	CAP, 470PF,200V,10%,CER	3	C	122	2.000	1.000	EA	B	YN	2.000	0	0	C20,70	00/00/00	99/99/99
823-336-51	CAP, 33UF,25V,10%,TANT	3	E	123	1.000	1.000	EA	B	YN	1.000	0	0	C38	00/00/00	99/99/99
880-PKB-12	ALARM-PIEZO,PCB MNT,12V	3	A	128	1.000	1.000	EA	B	YN	1.000	0	0	LS1	00/00/00	99/99/99
844-414-8X	DIODE, SIGNAL,100V,SWITCH	3	B	131	11.000	1.000	EA	B	YN	11.000	0	0	D7-11,19,31-33,35,36	00/00/00	99/99/99
845-581-7X	RECT, SCHOTKY,20V,1A,1N58	3	B	132	5.000	1.000	E	B	YN	5.000	0	0	D1-4,26	00/00/00	99/99/99
843-474-2X	DIODE, ZENER,12V,1W,5%	3	A	133	1.000	1.000	EA	B	YN	1.000	0	0	D16	00/00/00	99/99/99
843-474-4A	DIODE, ZENER,15V,1W,5%	3	B	134	3.000	1.000	EA	B	YN	3.000	0	0	D17,27,37	00/00/00	99/99/99
843-756-XX	DIODE, ZENER,8.2V,.4W,5%	3	B	135	2.000	1.000	EA	B	YN	2.000	0	0	D5,6	00/00/00	99/99/99
845-U40-04	RECT, 400V,1A,50NS	3	A	136	7.000	1.000	EA	B	YN	7.000	0	0	D21-25,28,30	00/00/00	99/99/99
845-MU1-66	RECT, DUAL,600V,16A,35NS,	3	B	137	1.000	1.000	EA	B	YN	1.000	0	0	D29	00/00/00	99/99/99
845-400-6X	RECT, 800V,1A,1N4006	3	B	138	5.000	1.000	EA	B	YN	5.000	0	0	D12,15,18,20,34	00/00/00	99/99/99
845-M81-00	RECT, 1000V,8A,50NS	3	B	139	2.000	1.000	EA	B	YN	2.000	0	0	D13,14	00/00/00	99/99/99
851-470-02	CHOKE 470UH 1.6A	3	B	143	1.000	1.000	EA	B	YN	1.000	0	0	L4	00/00/00	99/99/99
851-472-04	CHOKE 4700UH 0.16A	3	C	144	4.000	1.000	EA	B	YN	4.000	0	0	L1,2,3,5	00/00/00	99/99/99
5151581-01	ISOLATED SUPPLY XFMR	3	A	145	1.000	1.000	EA	B	YN	1.000	0	0	T1	00/00/00	99/99/99
833-MPS-A0	TRAN, NPN,70V,MPSA06	3	A	150	1.000	1.000	EA	B	YN	1.000	0	0	Q7	00/00/00	99/99/99
842-700-0X	FET, N-CHAN,60A,2N7000	3	B	152	1.000	1.000	EA	B	YN	1.000	0	0	Q5	00/00/00	99/99/99
836-541-6X	TRAN, PNP,350V,2N5416	3	C	154	1.000	1.000	EA	B	YN	1.000	0	0	Q2	00/00/00	99/99/99
832-P29-07	TRAN, PNP,50V,PN2907	3	D	156	1.000	1.000	EA	B	YN	1.000	0	0	Q6	00/00/00	99/99/99
842-TIP-48	TRAN, NPN,300V,TIP48	3	A	158	1.000	1.000	EA	B	YN	1.000	0	0	Q1	00/00/00	99/99/99
842-401-2L	FET,N-CHAN,400V,.16A T092	3	A	160	1.000	1.000	EA	B	YN	1.000	0	0	Q4	00/00/00	99/99/99
842-MTP-4N	FET, N-CHAN,500V,4A	3	E	161	2.000	1.000	EA	B	YN	2.000	0	0	Q3,8	00/00/00	99/99/99
849-TL4-31	REG SHUNT 3 TERM ADJ A	3	A	162	2.000	1.000	EA	B	YN	2.000	0	0	U19,22	00/00/00	99/99/99
849-C45-04	HEX LEVEL SHIFTER TTL-CMS	3	B	164	1.000	1.000	EA	B	YN	1.000	0	0	U2	00/00/00	99/99/99
848-CNY-17	OPTOCOUPLER, CNY17-2,6PIN	3	C	166	1.000	1.000	EA	B	YN	1.000	0	0	U12	00/00/00	99/99/99
849-384-4N	I MODE PWM CONT 3844	3	C	168	1.000	1.000	EA	B	YN	1.000	0	0	U17	00/00/00	99/99/99
849-C40-49	IC CMOS 6X INV BUF 4049B	3	B	170	1.000	1.000	EA	B	YN	1.000	0	0	U9	00/00/00	99/99/99
848-M81-02	OPTOCOUPLER, CNY17-3,6PIN	3	D	172	3.000	1.000	EA	B	YN	3.000	0	0	U15,16,18	00/00/00	99/99/99
849-C40-01	CMOS-CD4001BE--4X2IN-NO A	3	B	174	1.000	1.000	EA	B	YN	1.000	0	0	U10	00/00/00	99/99/99

BILL OF MATERIAL

AS OF 03/22/94

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5151562-01 OPCODE 3 REV: K PWA,CONTROL
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQ	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
849-I12-2P	ISO AMP ISO122P BB	3	A	176	1.000	1.000	EA	B	YN	1.000	0	0	U21	00/00/00	99/99/99
849-DG3-00	ANALOG SW DUAL:DG300ACJ	3	A	178	1.000	1.000	EA	B	YN	1.000	0	0	U3	00/00/00	99/99/99
849-C40-13	CMOS-CD4013BE DUAL-D-F	A	3	C	180	1.000	1.000	EA	B	YN	1.000	0	0	U14	00/00/00	99/99/99
849-L10-57	LT1057, DUAL, JFET,OP AMP	3	A	200	1.000	1.000	EA	B	YN	1.000	0	0	U20	00/00/00	99/99/99
849-101-4C	QUAD PRECISION OP AMP	3	B	216	2.000	1.000	EA	B	YN	2.000	0	0	U4,11	00/00/00	99/99/99
849-L10-58	LIN QUAD OPAMP LT1058	3	A	218	1.000	1.000	EA	B	YN	1.000	0	0	U1	00/00/00	99/99/99
849-C40-93	CMOS CD4093BE 4X2IN SCH	A	3	B	220	2.000	1.000	EA	B	YN	2.000	0	0	U7,13	00/00/00	99/99/99
849-C40-70	CMOS CD4070BE 4X2IN EXO	A	3	C	222	1.000	1.000	EA	B	YN	1.000	0	0	U8	00/00/00	99/99/99
849-LM3-11	LIN LM311H DUAL-COMP	A	3	C	224	2.000	1.000	EA	B	YN	2.000	0	0	U5,6	00/00/00	99/99/99
849-780-5P	REG UA7805UC 5V-TO2	A	3	F	230	1.000	1.000	EA	B	YN	1.000	0	0	VR1	00/00/00	99/99/99
849-791-2P	REG NEG 12V 15W TO220	A	3	D	232	1.000	1.000	EA	B	YN	1.000	0	0	VR2	00/00/00	99/99/99
856-730-6X	CONN,HEADER,30P,2ROW		3	B	234	1.000	1.000	EA	B	YN	1.000	0	0	J4	00/00/00	99/99/99
856-104-1R	CON MOLEX 09-75-1041 4P	A	3	B	236	1.000	1.000	EA	B	YN	1.000	0	0	J3	00/00/00	99/99/99
856-416-72	RIGHT,ANGLE,6PIN,HEADER		3	A	238	1.000	1.000	EA	B	YN	1.000	0	0	J2	00/00/00	99/99/99
856-109-75	CONN,9PIN, RTANGLE GOLD		3	A	239	1.000	1.000	EA	B	YN	1.000	0	0	J1	00/00/00	99/99/99
894-607-3B	HEATSINK 6073B THERMALL	S	3	A	240	3.000	1.000	EA	B	YN	3.000	0	0	XQ8,XVR1,XD29	00/00/00	99/99/99
110CA04-20	SCR 4-40X1.25L PPH	A	3		252	1.000	1.000	EA	F	YN	1.000	0	0	.	00/00/00	99/99/99
110CA20-09	SCREW 4-40X.563 PPH SS		3		253	1.000	1.000	EA	F	YN	1.000	0	0	.	00/00/00	99/99/99
110CA20-07	SCREW 4-40X7/16 PPH S/S		3		254	5.000	1.000	EA	F	YN	5.000	0	0	.	00/00/00	99/99/99
111CA80-01	WASHER #4 FIBER	A	3		255	4.000	1.000	EA	F	YN	4.000	0	0	.	00/00/00	99/99/99
111CA20-01	WASHER #4 FLAT S/S		3		256	14.000	1.000	EA	F	YN	14.000	0	0	.	00/00/00	99/99/99
111CC20-01	WASHER #4 SPLIT LK S/S		3		258	7.000	1.000	EA	F	YN	7.000	0	0	.	00/00/00	99/99/99
111CF80-01	SHLDR WSHR,4.25 O.D .12ID		3	A	259	1.000	1.000	EA	F	YN	1.000	0	0	.	00/00/00	99/99/99
112CA20-01	NUT #4-40 HEX S/S		3		260	4.000	1.000	EA	F	YN	4.000	0	0	.	00/00/00	99/99/99
896-TY2-3M	EXP. TYRAP TY23M/URN-3	A	3	B	262	1.000	1.000	EA	F	YN	1.000	0	0	.	00/00/00	99/99/99
995-511-13	WIRE, 22 AWG,BUS,TIN CO		3	-	264	.000	1.000	FT	F	YN	.000	0	0	REF	00/00/00	99/99/99
1131226-99	WIRE 26AWG,WHT TEFZEL		3		265	.000	1.000	EA	F	YN	.000	0	0	REF	00/00/00	99/99/99
9950313-02	STRIP, .002 CU,.6875,EI		3	A	270	.000	1.000	FT	B	YN	.000	0	0	AR	00/00/00	99/99/99
T151562-01	TP,CTRL PWA		3	D	299	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
109-962-03	HUMISEAL SPRAY	S	3	B	300	.000	1.000	EA	F	YN	.000	0	0	REF	00/00/00	99/99/99
109-499-45	ADHESIVE GEL 499		3	A	301	.000	1.000	OZ	F	YN	.000	0	0	A/R	00/00/00	99/99/99
109-499-46	ACTIVATOR 710 USE W/499		3	A	303	.000	1.000	OZ	F	YN	.000	0	0	A/R	00/00/00	99/99/99
109-961-26	RTV,RUBBER CMPD,CLEAR		3	A	375	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
801-153-05	RES, 15 K, 1/4W,2%,M-F		3		376	1.000	1.000	EA	B	YN	1.000	0	0	R110	00/00/00	99/99/99
820-681-05	CAP, 680PF,500V,5%,DIPMIC		3	B	378	1.000	1.000	EA	B	YN	1.000	0	0	C85	00/00/00	99/99/99
812-150-4F	RES, 1.5 M, 1/10W,1%,M-F		3		380	1.000	1.000	EA	B	YN	1.000	0	0	R18	00/00/00	99/99/99
802-272-05	RES, 2.7 K, 1/2W,2%,M-F		3		382	1.000	1.000	EA	B	YN	1.000	0	0	R17	00/00/00	99/99/99

ASSY PART NO.	TITLE	SHT. 1 OF 4	REV.	ELGAR
5151560-01	PWA, INVERTER POWER	SHT. ___ IS ___ SIZE	F	

DRAWN J.WESTERFIELD	DATE 7-7-92	PROJ. ENG. Casey Kimura	DATE 7/9/92
CHECKED Piet	DATE 7/7/92	QA-REL. Timothy Cost	DATE 920709

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	X								PWA INVERTER POWER	JW	Piet	DRP	7/7/92
B	■								REVISED PER ECN 8345	JW	STAPP	D. Stapp	3-21-94
C	■								REVISED PER ECN 8375A	JW	STAPP	D. Stapp	3-21-94
D	■								REVISED PER ECN 8492	JW	STAPP	D. Stapp	3-21-94
E	■								REVISED PER ECN 8660	JW	STAPP	D. Stapp	3-21-94
F	■								REVISED PER ECN 8681	JW	STAPP	D. Stapp	3-21-94
										JW			

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X								PRODUCTION RELEASE PER DRN R0352 JW 7/7/92	GUPS2400
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

1001030-01

DISTRIBUTION: JOANW -

BILL OF MATERIAL

AS OF 03/17/94

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 110 SUB-ASSY MISC

5151560-01 OPCODE: 3 REV: F PWA,INVERTER POWER
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

OP: ORDER POLICY CODE
REQ: N=PART OPTIONAL
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PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQF	DEFAULT QUANTITY	DAYS OFFSET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
9151560-01	PWB,INVERTER POWER	3	B	1	1.000	1.000	EA	B	YN	1.000	0	0	.	00/00/00	99/99/99
6151560-01	SCHEMATIC INVERTER PWR	3	C	2	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
2151560-01	ARTWORK,INVERTER POWER	3	A	3	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
801-330-05	RES, 33 OHM,1/4W,2%,M-F	3		4	2.000	1.000	EA	B	YN	2.000	0	0	R41,42	00/00/00	99/99/99
801-221-05	RES, 220 OHM,1/4W,2%,M-F	3		5	2.000	1.000	EA	B	YN	2.000	0	0	R21,43	00/00/00	99/99/99
801-102-05	RES, 1 K, 1/4W,2%,M-F	3		6	6.000	1.000	EA	B	YN	6.000	0	0	R1,4,11,14,24,33	00/00/00	99/99/99
801-391-05	RES, 390 OHM,1/4W,2%,M-F	3		7	6.000	1.000	EA	B	YN	6.000	0	0	R2,12,22,31,55,56	00/00/00	99/99/99
802-100-05	RES, 10 OHM,1/2W,2%,M-F	3		8	20.000	1.000	EA	B	YN	20.000	0	0	R5-9,15-19,25-29,34-38	00/00/00	99/99/99
802-221-05	RES, 220 OHM,1/2W,2%,M-F	3		9	6.000	1.000	EA	B	YN	6.000	0	0	R3,13,23,32,54,57	00/00/00	99/99/99
801-1R0-05	RES, 1 OHM,1/4W,5%,M-F	3		10	2.000	1.000	EA	B	YN	2.000	0	0	R44,45	00/00/00	99/99/99
804-221-05	RES, 220 OHM,2W,5%	3		11	4.000	1.000	EA	B	YN	4.000	0	0	R10,20,30,39	00/00/00	99/99/99
812-100-1F	RES, 1 K, 1/10W,1%,M-F	3		12	4.000	1.000	EA	B	YN	4.000	0	0	R46,49,52,53	00/00/00	99/99/99
801-100-05	RES, 10 OHM,1/4W,2%,M-F	3		13	2.000	1.000	EA	B	YN	2.000	0	0	R59,60	00/00/00	99/99/99
812-100-2F	RES, 10 K, 1/10W,1%,M-F	3		14	2.000	1.000	EA	B	YN	2.000	0	0	R47,50	00/00/00	99/99/99
812H453-1F	RES, 4.53 K,1/10W,1%,M-F	3		16	2.000	1.000	EA	B	YN	2.000	0	0	R48,51	00/00/00	99/99/99
813-604-1F	RES, 6.04 K, 1/8W,1%,M-F	3		17	1.000	1.000	EA	B	YN	1.000	0	0	R40	00/00/00	99/99/99
821-102-NP	CAP, 1000PF,50V,5%,CER	3	C	18	1.000	1.000	EA	B	YN	1.000	0	0	C27	00/00/00	99/99/99
821-104-CK	CAP, .10UF,50V,10%,CER	3	A	22	7.000	1.000	EA	B	YN	7.000	0	0	C2,10,16,22,32,33,37	00/00/00	99/99/99
821-471-CK	CAP, 470PF,200V,10%,CER	3	C	23	1.000	1.000	EA	B	YN	1.000	0	0	C31	00/00/00	99/99/99
821-474-CK	CAP, .47UF,50V,10%,CER	3	A	24	11.000	1.000	EA	B	YN	11.000	0	0	C1,4,9,12,15,18,21,24,28,35,36	00/00/00	99/99/99
821-102-CK	CAP, 1000PF,200V,10%,CER	3	B	25	1.000	1.000	EA	B	YN	1.000	0	0	C30	00/00/00	99/99/99
822-225-60	CAP, 2.2UF,600V,10%,FILM	3	B	26	4.000	1.000	EA	B	YN	4.000	0	0	C7,8,38,39	00/00/00	99/99/99
822-473-PP	CAP, .047UF,630V,10%,FILM	3	A	28	4.000	1.000	EA	B	YN	4.000	0	0	C6,14,20,26	00/00/00	99/99/99
822-473-16	CAP, .047UF,160V,5%,FILM	3	A	29	4.000	1.000	EA	B	YN	4.000	0	0	C5,13,19,25	00/00/00	99/99/99
824-566-25	CAP, 56UF,25V,ELEC,RAD	3	A	30	7.000	1.000	EA	B	YN	7.000	0	0	C3,11,17,23,29,34,40	00/00/00	99/99/99
835-364-3P	TRAN, NPN,30V,PN3643	3		32	1.000	1.000	EA	B	YN	1.000	0	0	Q25	00/00/00	99/99/99
842-MJE-20	TRAN, NPN,25V,5A	3	A	33	4.000	1.000	EA	B	YN	4.000	0	0	Q1,7,13,19	00/00/00	99/99/99
842-MJE-21	TRAN, PNP,25V,5A	3	A	34	4.000	1.000	EA	B	YN	4.000	0	0	Q2,8,14,20	00/00/00	99/99/99

CLASS CODE GROUP: 1 COMMODITY CLASS
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5151560-01 OPCODE: 3 REV: F PWA,INVERTER POWER
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

OP: ORDER POLICY CODE
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PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQ	DEFAULT QUANTITY	DAYS OFFSET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
842-FD1-10	FET, N-CHAN,IRFD110	3	A	35	1.000	1.000	EA	B	YN	1.000	0	0	Q26	00/00/00	99/99/99
842-460-IR	FET, N-CHAN,600V,14A,T021	3	B	36	16.000	1.000	EA	B	YN	16.000	0	0	Q3-6,9-12, 15-18,21-24	00/00/00	99/99/99
845-U40-02	RECT, 100V,1A,50NS	3	A	37	4.000	1.000	EA	B	YN	4.000	0	0	D14-17	00/00/00	99/99/99
843-474-4A	DIODE, ZENER,15V,1W,5%	3	B	38	1.000	1.000	EA	B	YN	1.000	0	0	D13	00/00/00	99/99/99
843-473-3X	DIODE, ZENER,5.1V,1W,5%	3	B	39	5.000	1.000	EA	B	YN	5.000	0	0	D1,4,7,10, 22	00/00/00	99/99/99
845-454-5C	RECT, DUAL SCHOT,45V,30A	3	D	40	4.000	1.000	EA	B	YN	4.000	0	0	D2,5,8,11	00/00/00	99/99/99
845-581-7X	RECT, SCHOTKY,20V,1A,1N58	3	B	41	10.000	1.000	E	B	YN	10.000	0	0	D20,21,31-38	00/00/00	99/99/99
845-U40-05	RECT, 600V,1A,50NS	3	A	42	2.000	1.000	EA	B	YN	2.000	0	0	D18,19	00/00/00	99/99/99
845-FEP-30	DIODE,DUAL,600V,30A,TO-3P	3	D	43	4.000	1.000	EA	B	YN	4.000	0	0	D3,6,9,12	00/00/00	99/99/99
845-100-15	RECT, PWR,15A,100V,35NS	3	C	44	4.000	1.000	EA	B	YN	4.000	0	0	D23,25,27, 29	00/00/00	99/99/99
845-600-15	RECT, 600V,15A,50NS	3	B	45	4.000	1.000	EA	B	YN	4.000	0	0	D24,26,28, 30	00/00/00	99/99/99
849-352-5A	IC LIN PW MODULATOR A	3	A	46	1.000	1.000	EA	B	YN	1.000	0	0	U9	00/00/00	99/99/99
849-TL4-31	REG SHUNT 3 TERM ADJ A	3	A	47	1.000	1.000	EA	B	YN	1.000	0	0	U13	00/00/00	99/99/99
849-LM3-19	LM319,COMPARITOR PREC HS	3	B	48	1.000	1.000	EA	B	YN	1.000	0	0	U10	00/00/00	99/99/99
849-HCP-L2	OPTO-HCPL 2611	3	B	52	6.000	1.000	EA	B	YN	6.000	0	0	U1,3,5,7,11,12	00/00/00	99/99/99
849-362-6M	SG3626 DUAL FET DRIVER A	3	A	53	4.000	1.000	EA	B	YN	4.000	0	0	U2,4,6,8	00/00/00	99/99/99
851-220-05	CHOKE,220UH .5A	3	A	54	1.000	1.000	EA	B	YN	1.000	0	0	L1	00/00/00	99/99/99
858-KLM-30	FUSE,FAST 30A 500VDC	3	B	55	1.000	1.000	EA	B	YN	1.000	0	0	F1	00/00/00	99/99/99
858-340-09	FUSE CLIP PCB 13-32 A	3	A	56	2.000	1.000	EA	B	YN	2.000	0	0	XF1	00/00/00	99/99/99
856-201-7M	CONN M 20POS 2ROW RIBBON	3	A	58	1.000	1.000	EA	B	YN	1.000	0	0	J1	00/00/00	99/99/99
856-104-11	09-72-1041 4P GOLD PC M A	3	C	59	1.000	1.000	EA	B	YN	1.000	0	0	J3	00/00/00	99/99/99
856-011-0V	CONN,POWER 8P MALE RANGLE	3	B	60	1.000	1.000	EA	B	YN	1.000	0	0	J2	00/00/00	99/99/99
861-67F-95	THERMO CLS 95C T0220 S	3	A	62	1.000	1.000	EA	B	YN	1.000	0	0	S1	00/00/00	99/99/99
5151585-01	XFMR,ISOLATED SUPPLY	3	B	64	1.000	1.000	EA	B	YN	1.000	0	0	T1	00/00/00	99/99/99
895-115-XX	TERMINAL,SCREW	3	A	65	2.000	1.000	EA	B	YN	2.000	0	0	E1,2	00/00/00	99/99/99
9151540-01	BAR,FET	3	A	66	4.000	1.000	EA	B	YN	4.000	0	0		00/00/00	99/99/99
111CA20-01	WASHER #4 FLAT S/S	3		68	39.000	1.000	EA	F	YN	39.000	0	0	.	00/00/00	99/99/99
111CC20-01	WASHER #4 SPLIT LK S/S	3		69	37.000	1.000	EA	F	YN	37.000	0	0	.	00/00/00	99/99/99
111CF80-01	SHLDR WSHR,4.25 O.D .12ID	3	A	70	8.000	1.000	EA	F	YN	8.000	0	0	.	00/00/00	99/99/99
9151541-01	INSULATOR	3	A	73	4.000	1.000	EA	B	YN	4.000	0	0		00/00/00	99/99/99
112CA20-01	NUT #4-40 HEX S/S	3		74	4.000	1.000	EA	F	YN	4.000	0	0		00/00/00	99/99/99
111CA80-01	WASHER #4 FIBER A	3		75	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
110CA20-05	SCREW 4-40X5/16 PPH SS	3		76	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
110CA20-07	SCREW 4-40X7/16 PPH S/S	3		77	27.000	1.000	EA	F	YN	27.000	0	0		00/00/00	99/99/99

BILL OF MATERIAL

AS OF 03/17/94

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CLASS CODE: 110 SUB-ASSY MISC

5151560-01 OPCODE: 3 REV: F PWA,INVERTER POWER
MODEL:
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110CA20-06	SCREW 4-40X3/8 PPH S/S		3		78	8.000	1.000	EA	F	YN	8.000	0	0		00/00/00	99/99/99
110DG20-08	SCREW 6-32C1/2 PFH 100		3		84	6.000	1.000	EA	F	YN	6.000	0	0		00/00/00	99/99/99
9151587-01	SPACER		3	A	86	6.000	1.000	EA	B	YN	6.000	0	0		00/00/00	99/99/99
109-T02-20	TO-220-ISOLATOR	A	3		93	8.000	1.000	EA	B	YN	8.000	0	0		00/00/00	99/99/99
109-T24-7X	SILPAD INSULATOR TO247		3	A	94	24.000	1.000	EA	B	YN	24.000	0	0		00/00/00	99/99/99
896-TY2-3M	EXP. TYRAP TY23M/WRN-3	A	3	B	95	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
T151560-01	ATP INVERTER POWER		3	B	200	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
109-962-03	HUMISEAL SPRAY	S	3	B	300	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
109-499-45	ADHESIVE GEL 499		3	A	301	.000	1.000	OZ	F	YN	.000	0	0	AR	00/00/00	99/99/99
109-499-46	ACTIVATOR 710 USE W/499		3	A	302	.000	1.000	OZ	F	YN	.000	0	0	AR	00/00/00	99/99/99
109-961-2X	SEALANT LOCTITE #222	S	3	A	303	.000	1.000	EA	F	YN	.000	0	0		00/00/00	99/99/99

ASSY PART NO.	TITLE	SHT. 1 OF 4	REV.
5151586-01	PWA, PROCESSOR	SHT. ___ IS ___ SIZE	M

ELGAR

DRAWN	DATE	PROJ. ENG.	DATE
George Hopf	7-1-92		7/7/92
CHECKED	DATE	QA-REL.	DATE
Flint	7/7/92	Timothy Reed	920707

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	X								PRODUCTION RELEASE PER DRN R0346		DRP	Flint	7/7/92
B	■								REVISED PER ECN# 8345	JEW	STAPP		3-22-94
C	■								REVISED PER ECN# 8421	JEW	STAPP		3-22-94
D	■								REVISED PER ECN# 8462	JEW	STAPP		3-22-94
E	■								REVISED PER ECN# 8480	JEW	STAPP		3-22-94
F	■								REVISED PER ECN# 8493	JEW	STAPP		3-22-94
G	■								REVISED PER ECN# 8549A	JEW	STAPP		3-22-94
H	■								REVISED PER ECN# 8643	JEW	STAPP		3-22-94
J	■								REVISED PER ECN# 8673	JEW	STAPP		3-22-94

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X								PROCESSOR BOARD	GUPS2400
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

1001030-01

ASSY PART NO.	TITLE	SHT. 2 OF 4	REV.
5151586-01	PWA, PROCESSOR	SHT. IS SIZE	M

ELGAR

DRAWN	GEORGE LOPEZ	DATE	7/1/92	PROJ. ENG.	TOM KENNY	DATE	7/7/92
CHECKED	DWAYNE PRESTON	DATE	7/7/92	QA-REL.	TIM ROTH	DATE	920707

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
K	■								REVISED PER ECN# 8696	JEW	STAPP		
L	■								REVISED PER ECN# 8850	JEW	STAPP		
M	■								REVISED PER ECN# 8851	JEW	STAPP		

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X									
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

CLASS CODE GROUP: 1 COMMODITY CLASS
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5151586-01 OPCODE: 3 REV: M PWA, PROCESSOR BOARD
MODEL:
ECO NO:
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9151586-01	PWB PROCESSOR	3	A	10	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
2151586-01	ARTWORK PROCESSOR BOARD	3	A	11	.000	1.000	EA	B	YN	.000	0	0	.	00/00/00	99/99/99
6151586-01	SCHEMATIC,PROCESSOR BD	3	H	12	.000	1.000	EA	B	YN	.000	0	0	.	00/00/00	99/99/99
801-4R7-05	RES, 4.7 OHM,1/4W,5%,M-F	3		20	2.000	1.000	EA	B	YN	2.000	0	0	R10,16	00/00/00	99/99/99
801-102-05	RES, 1 K, 1/4W,2%,M-F	3		22	2.000	1.000	EA	B	YN	2.000	0	0	R8,18	00/00/00	99/99/99
801-103-05	RES, 10 K, 1/4W,2%,M-F	3		24	2.000	1.000	EA	B	YN	2.000	0	0	R9,11	00/00/00	99/99/99
801-105-05	RES, 1 M, 1/4W,2%,M-F	3		26	1.000	1.000	EA	B	YN	1.000	0	0	R4	00/00/00	99/99/99
801-220-05	RES, 22 OHM,1/4W,2%,M-F	3		28	1.000	1.000	EA	B	YN	1.000	0	0	R17	00/00/00	99/99/99
801-222-05	RES, 2.2 K, 1/4W,2%,M-F	3		30	3.000	1.000	EA	B	YN	3.000	0	0	R2,13,15	00/00/00	99/99/99
801-331-05	RES, 330 OHM,1/4W,2%,M-F	3		32	2.000	1.000	EA	B	YN	2.000	0	0	R12,14	00/00/00	99/99/99
812-150-2F	RES, 15 K, 1/10W,1%,M-F	3		42	1.000	1.000	EA	B	YN	1.000	0	0	R19	00/00/00	99/99/99
821-102-NP	CAP, 1000PF,50V,5%,CER	3	C	47	1.000	1.000	EA	B	YN	1.000	0	0	C38	00/00/00	99/99/99
821-471-CK	CAP, 470PF,200V,10%,CER	3	C	48	1.000	1.000	EA	B	YN	1.000	0	0	C37	00/00/00	99/99/99
821-104-CK	CAP, .10UF,50V,10%,CER	3	A	50	24.000	1.000	EA	B	YN	24.000	0	0	C1-11,14-17,20-24,26-29	00/00/00	99/99/99
823-106-21	CAP, 10UF,20V,10%,TANT	3	C	51	1.000	1.000	EA	B	YN	1.000	0	0	C25	00/00/00	99/99/99
823-226-61	CAP, 22UF,35V,10%,TANT	3	D	52	1.000	1.000	EA	B	YN	1.000	0	0	C13	00/00/00	99/99/99
823-105-61	CAP, 1UF,35V,20%,TANT	3	D	53	5.000	1.000	EA	B	YN	5.000	0	0	C30-34	00/00/00	99/99/99
820-330-05	CAP, 33PF,500V,5%,DIPMICA	3	B	54	2.000	1.000	EA	B	YN	2.000	0	0	C18,19	00/00/00	99/99/99
824-566-35	CAP, 56UF,35V,ELEC,RAD	3		56	2.000	1.000	EA	B	YN	2.000	0	0	C12,35	00/00/00	99/99/99
843-474-4A	DIODE, ZENER,15V,1W,5%	3	B	58	1.000	1.000	EA	B	YN	1.000	0	0	D6	00/00/00	99/99/99
844-414-8X	DIODE, SIGNAL,100V,SWITCH	3	B	60	2.000	1.000	EA	B	YN	2.000	0	0	D1,4	00/00/00	99/99/99
845-493-6X	RECT, 400V,1A,1N4936	3	C	62	3.000	1.000	EA	B	YN	3.000	0	0	D2,3,7	00/00/00	99/99/99
845-581-7X	RECT, SCHOTKY,20V,1A,1N58	3	B	63	2.000	1.000	E	B	YN	2.000	0	0	D8,9	00/00/00	99/99/99
845-U40-02	RECT, 100V,1A,50NS	3	A	64	1.000	1.000	EA	B	YN	1.000	0	0	D5	00/00/00	99/99/99
856-201-7M	CONN M 20POS 2ROW RIBBON	3	A	70	1.000	1.000	EA	B	YN	1.000	0	0	J1	00/00/00	99/99/99
856-104-04	CONN-HEADER 20PIN W/LOCK	3	A	71	2.000	1.000	EA	B	YN	2.000	0	0	J2,3	00/00/00	99/99/99
856-732-15	CONN 30P MOLES VERT MNT	3	A	74	1.000	1.000	EA	B	YN	1.000	0	0	J4	00/00/00	99/99/99
818-103-SP	RESNET, 10 K,2%,10P,9R,SI	3	C	80	1.000	1.000	EA	B	YN	1.000	0	0	R1	00/00/00	99/99/99
818-331-S4	RESNET, 330 OHM,2%,8P,4R	3	A	84	1.000	1.000	EA	B	YN	1.000	0	0	R3	00/00/00	99/99/99
818-222-SP	RESNET, 2.2 K,2%,10P,SIP	3	C	90	1.000	1.000	EA	B	YN	1.000	0	0	R7	00/00/00	99/99/99
848-H11-L2	OPTOISOLATOR, H11L2,6PIN	3	D	92	2.000	1.000	EA	B	YN	2.000	0	0	U14,15	00/00/00	99/99/99
5151711-04	S/W ASSY,EPROM,GUPS2400	0	A	99	1.000	1.000	EA	X	YN	1.000	0	0	U4	00/00/00	99/99/99
849-M80-98	12MHZ U PROCESSOR 8 BIT	3	B	100	1.000	1.000	EA	B	YN	1.000	0	0	U1	00/00/00	99/99/99
849-H37-3X	HCMOS 74HC373 OCTALLATCH	3	A	102	1.000	1.000	EA	B	YN	1.000	0	0	U2	00/00/00	99/99/99
842-TN4-01	FET, N-CHAN,TN0401L,40V,6	3	A	103	1.000	1.000	EA	B	YN	1.000	0	0	Q1	00/00/00	99/99/99
5151630-01	PAL ASSY REV 1.0	3	A	104	1.000	1.000	EA	X	YN	1.000	0	0	U3	00/00/00	99/99/99
849-232-RS	DRIVER RS232 MAX232 +5V S	3	C	105	1.000	1.000	EA	B	YN	1.000	0	0	U13	00/00/00	99/99/99
849-121-6B	SMART WATCH/RAM 16/64K	3	A	108	1.000	1.000	EA	B	YN	1.000	0	0	XU5	00/00/00	99/99/99
849-611-6L	RAM,CMOS 2KX8,24P,LO PWR	3	B	109	1.000	1.000	EA	B	YN	1.000	0	0	U5	00/00/00	99/99/99

BILL OF MATERIAL

AS OF 03/17/94

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 110 SUB-ASSY MISC

OP: ORDER POLICY CODE
REQ: N=PART OPTIONAL
Y=PART REQUIRED
PF: N=PART DOES NOT PRINT ON SALES ORDER
Y=PART PRINTS ON SALES ORDER W/O PRICE
P=PART PRINTS ON SALES ORDER WITH PRICE

5151586-01 OPCODE: 3 REV: M PWA, PROCESSOR BOARD
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQF	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
849-H57-4X	IC OCTAL D-TYPE EDGTRG FF	3	A	112	2.000	1.000	EA	B	YN	2.000	0	0	U7,8	00/00/00	99/99/99
849-LM3-36	DIODE, REFERENCE	3	A	113	1.000	1.000	EA	B	YN	1.000	0	0	U12	00/00/00	99/99/99
849-U20-03	LINE DRIVER CHIP .5A A	3	B	114	2.000	1.000	EA	B	YN	2.000	0	0	U9,10	00/00/00	99/99/99
849-H24-4X	HCMOS 74HC244 INV OCT BUF	3	A	116	1.000	1.000	EA	B	YN	1.000	0	0	U11	00/00/00	99/99/99
849-384-5X	IC UC3845 PWM CONTROLLER	3	A	120	1.000	1.000	EA	B	YN	1.000	0	0	U17	00/00/00	99/99/99
849-78L-05	REG 78L05 POS 5V TO A	3	A	122	1.000	1.000	EA	B	YN	1.000	0	0	U16	00/00/00	99/99/99
856-554-7X	CONN HEADER MICRO SHUNT A	3	C	145	4.000	1.000	EA	B	YN	4.000	0	0	W3-6	00/00/00	99/99/99
861-T82-12	RELAY, 12V DPDT PCB MOUNT	3	A	148	2.000	1.000	EA	B	YN	2.000	0	0	K1,2	00/00/00	99/99/99
864-12M-HZ	CRYSTAL 12.0 MHZ HC-18	3	A	150	1.000	1.000	EA	B	YN	1.000	0	0	Y1	00/00/00	99/99/99
5151648-01	SCR,GATE DRIVE XFMR	3	A	160	1.000	1.000	EA	B	YN	1.000	0	0	T1	00/00/00	99/99/99
T151586-01	PROCESSOR,DISPLAY BD TP	3	A	165	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
801-472-05	RES, 4.7 K, 1/4W,2%,M-F	3		168	3.000	1.000	EA	B	YN	3.000	0	0	R5,6,20	00/00/00	99/99/99
849-DIP-28	DIP SOCKET 28 PIN A	3	B	170	1.000	1.000	EA	B	YN	1.000	0	0	XU4	00/00/00	99/99/99
849-DIP-24	DIP SOCKET 24 PIN A	3	D	175	1.000	1.000	EA	B	YN	1.000	0	0	XU3	00/00/00	99/99/99
109-962-03	HUMISEAL SPRAY S	3	B	300	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
995-511-13	WIRE, 22 AWG,BUS,TIN CO	3	-	301	1.000	1.000	FT	F	YN	1.000	0	0		00/00/00	99/99/99
109-499-45	ADHESIVE GEL 499	3	A	302	.000	1.000	OZ	F	YN	.000	0	0	AR	00/00/00	99/99/99
109-499-46	ACTIVATOR 710 USE W/499	3	A	303	.000	1.000	OZ	F	YN	.000	0	0	AR	00/00/00	99/99/99
1131226-99	WIRE 26AWG,WHT TEFZEL	3		305	1.000	1.000	EA	F	YN	1.000	0	0		00/00/00	99/99/99

ASSY PART NO.	TITLE	SHT. 1 OF 3	REV.	ELGAR
5151502-01	BATTERY MODULE ASSY	SHT. — IS — SIZE	B	

DRAWN √ SCHNEIDER	DATE 3-20-92	PROJ. ENG. [signature] 6/3/92	DATE
CHECKED Valerie Schneider	DATE 6-4-92	QA-REL. [signature]	DATE 20605

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	■								PROD REL PER DRN R0332	√ SCHNGIDER			
B	■								INCORP PER ECN 8373	Schneider	Val	[signature]	11/9/92

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X								BATTERY MOD ASSY GUPS2400	
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

ELGAR CORPORATION
BILL OF MATERIALS INQUIRY
SINGLE LEVEL

VEL	MATERIAL ITEM	DESCRIPTION	ITM TPE	SEQ	UM	QTY PER	LEAD TIME
	5151502-01	B BATTERY MODULE ASSY	4		EA		1.0
	9151544-01	B FRT PNL,BATT MOD W/SS	4	0001	EA	1.0	30.0
	REF DESIGNATORS						
	9151550-01	A TRAY BATTERY	4	0002	EA	1.0	40.0
	REF DESIGNATORS						
	9151547-01	C LFT SIDE PANEL	4	0003	EA	1.0	40.0
	REF DESIGNATORS						
	9151548-01	C RT SIDE PANEL	4	0004	EA	1.0	40.0
	REF DESIGNATORS						
	9151551-01	A COVER TOP BATT MOD	4	0005	EA	1.0	40.0
	REF DESIGNATORS						
	9151546-01	A SUPPORT,BATTERY	4	0006	EA	1.0	40.0
	REF DESIGNATORS						
	5151566-01	B PWA BATTERY CONNECTOR	4	0007	EA	1.0	10.0
	REF DESIGNATORS						
	9151552-01	A SPACER BATT MODULE	4	0008	EA	4.0	40.0
	REF DESIGNATORS						
	9151553-01	A BRACKET CONN BATT	4	0009	EA	1.0	40.0
	REF DESIGNATORS						
	9151554-01	A STOP, CLAMP BOTTOM	4	0010	EA	1.0	40.0
	REF DESIGNATORS						
	9151555-01	A STOP CLAMP-TOP BAT MOD	4	0011	EA	1.0	40.0
	REF DESIGNATORS						
	9151556-01	A SOCKET, BAR	4	0012	EA	1.0	40.0
	REF DESIGNATORS						
	9151532-01	C BATTERY PAC-BATT MOD	4	0013	EA	4.0	40.0
	REF DESIGNATORS						
	9151533-01	A COVER, BATTERY	4	0014	EA	4.0	40.0
	REF DESIGNATORS						
	9960066-01	C LABEL SERIAL TAG	4	0015	EA	1.0	30.0
	REF DESIGNATORS						
	863-135-02	A HANDLE,OVAL 1/2X1/4X4.0	4	0016	EA	1.0	30.0
	REF DESIGNATORS						
	9980088-01	B LABEL-DANGER HIGH VOLTC	4	0017	EA	1.0	30.0
	REF DESIGNATORS						
	109-961-2X	SEALANT LOCTITE #222 S	4	0018	EA	0.0	1.0
	REF DESIGNATORS	AR					
	9151593-01	A INSULATIO,BATT CONN	4	0019	EA	1.0	10.0
	REF DESIGNATORS						
	9151579-01	A LABEL,WARNING BATT MOD	4	0020	EA	1.0	30.0
	REF DESIGNATORS						
	9151580-01	A LABEL,CAUTION BATT MOD	4	0021	EA	1.0	30.0
	REF DESIGNATORS						
	9151588-01	A T-HANDLE MOD DWG	4	0022	EA	1.0	30.0
	REF DESIGNATORS						
	9151549-01	A BLOCK,STOP	4	0023	EA	1.0	40.0
	REF DESIGNATORS						
	110EG20-08	SCREW 8-32X.50 PFH S/S	4	0024	EA	6.0	1.0
	REF DESIGNATORS						
	110EG20-06	SCREW 8-32 X .37 100 PFH	4	0026	EA	6.0	1.0
	REF DESIGNATORS						
	110DG20-06	SCR 6-32X3/8 PFH 100DEG A	4	0027	EA	35.0	1.0
	REF DESIGNATORS						

EL	MATERIAL ITEM	DESCRIPTION	ITM TPE	SEQ	UM	QTY PER	LEAD TIME
	5151502-01	B BATTERY MODULE ASSY	4		EA	35.0	1.0
	110DG20-05	SCREW 6-32X.31 SST 100D A	4	0028	EA	12.0	1.0
	REF DESIGNATORS						
	110DA20-06	SCREW 6-32X3/8 PPH S/S	4	0029	EA	6.0	1.0
	REF DESIGNATORS						
	110DA20-08	SCREW 6-32X1/2 PPH S/S	4	0031	EA	2.0	1.0
	REF DESIGNATORS						
	111DA20-01	WASHER #6 FLAT S/S	4	0032	EA	8.0	1.0
	REF DESIGNATORS						
	111DC20-01	WASHER #6 SPLIT LK S/S	4	0033	EA	8.0	1.0
	REF DESIGNATORS						
	896-TY2-3M	EXP. TYRAP TY23M/WRN-3 A	4	0035	EA	0.0	20.0
	REF DESIGNATORS	AR					
	995-511-06	1 MYLAR TAPE CLASS A	P 4	0038	RL	0.0	20.0
	REF DESIGNATORS	AR					

<< END OF REPORT >>

ASSY PART NO.	TITLE	SHT. 1 OF 5	REV.	ELGAR
515156I-01	PWA, BATTERY CHARGER	SHT. ___ IS ___ SIZE	A	

DRAWN J WESTERFIELD	DATE 7/8/92	PROJ. ENG.	DATE 7/13/92
CHECKED Plest	DATE 7/8/92	QA-REL.	DATE 920713

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	X								PWA, BATTERY CHARGER	JW	DKP	Plest	7/8/92

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X								PRODUCTION RELEASE PER DRN R0353	GUPS2400
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

1001030-01

ELGAR CORPORATION
BILL OF MATERIALS INQUIRY
SINGLE LEVEL

EL

MATERIAL ITEM	DESCRIPTION		ITM TPE	SEQ	UM	QTY PER	LEAD TIME
5151561-01	A PWA,BATTERY CHARGER		4		EA		10.0
9151561-01	A PWB BATTERY CHARGER		4	0001	EA	1.0	40.0
REF DESIGNATORS	.						
2151561-01	A A/W BATTERY CHARGER		6	0002	EA	0.0	0.0
REF DESIGNATORS	.						
6151561-01	A SCHEMATIC,BATT CHARGER		6	0003	EA	0.0	0.0
REF DESIGNATORS	REF						
801-100-05	10 OHM 1/4 WATT 2% M F	A	4	0004	EA	3.0	30.0
REF DESIGNATORS	R3,10,36						
801-220-05	22 OHM 1/4 WATT 2% M F	A	4	0005	EA	2.0	30.0
REF DESIGNATORS	R43,47						
801-102-05	1 K OHM 1/4 WATT 2% M F	A	4	0007	EA	4.0	30.0
REF DESIGNATORS	R15,17,22,27						
801-103-05	10 K OHM 1/4 WATT 2% M	A	4	0009	EA	4.0	30.0
REF DESIGNATORS	R9,12,23,25						
801-104-05	100 K OHM 1/4 WATT 2% M	A	4	0011	EA	5.0	30.0
REF DESIGNATORS	R13,16,26,33,38						
801-183-05	18 K OHM 1/4 WATT 2% M	A	4	0012	EA	1.0	30.0
REF DESIGNATORS	R20						
801-223-05	22 K OHM 1/4 WATT 2% M	A	4	0013	EA	1.0	30.0
REF DESIGNATORS	R46						
801-471-05	470 OHM 1/4 WATT 2% M F	A	4	0014	EA	3.0	30.0
REF DESIGNATORS	R2,4,14						
802-102-05	1 K OHM 1/2 WATT 2% M F	A	4	0015	EA	1.0	30.0
REF DESIGNATORS	R32						
804-101-01	RES 2W 100 OHM M-OXIDE 5%		4	0018	EA	1.0	30.0
REF DESIGNATORS	R37						
804-221-02	RES 220 2W 5% METAL OXIDE		4	0020	EA	2.0	30.0
REF DESIGNATORS	R39,40						
804-1R0-WW	RES,2W, 1 OHM, 5% W/W		4	0021	EA	1.0	30.0
REF DESIGNATORS	R6						
804-683-01	RES 2W 68K OHM M-OXIDE 5%		4	0023	EA	2.0	30.0
REF DESIGNATORS	R44,45						
806-R10-01	RES-3W W/W 1% .1R		4	0025	EA	1.0	30.0
REF DESIGNATORS	R5						
807-303-05	RES 30K 5W 5% WW		4	0026	EA	1.0	30.0
REF DESIGNATORS	R1						
812-100-0F	RESISTOR .1W 1% 100R	P	4	0027	EA	2.0	70.0
REF DESIGNATORS	R41,42						
812-110-2F	11K 1% .1W RESISTOR	A	4	0029	EA	1.0	30.0
REF DESIGNATORS	R11						
812-121-1F	RESFXFILM 1.2K 1% 1/4W		4	0031	EA	1.0	30.0
REF DESIGNATORS	R21						
812-150-2F	RES .1W 1% RN55C 15.0K	A	4	0033	EA	1.0	30.0
REF DESIGNATORS	R30						
812-221-2F	RES .1W 1% 22.1K	A	4	0035	EA	1.0	30.0
REF DESIGNATORS	R34						
812-422-1F	RES .1W 1% RN55C 4.22K	A	4	0039	EA	2.0	30.0
REF DESIGNATORS	R8,29						
812-422-3F	RES .1W 1% RN55C 422K		4	0040	EA	1.0	30.0
REF DESIGNATORS	R24						
812-475-2F	RES .1W 1% RN55C 47.5K		4	0043	EA	1.0	30.0
REF DESIGNATORS	R35						

ELGAR CORPORATION
BILL OF MATERIALS INQUIRY
SINGLE LEVEL

EL	MATERIAL ITEM	DESCRIPTION	ITM TPE	SEQ	UM	QTY PER	LEAD TIME
	5151561-01	A PWA,BATTERY CHARGER	4		EA	1.0	10.0
	812-787-0F	RESFXFILM 787 1% 1/4W	4	0046	EA	3.0	30.0
	REF DESIGNATORS	R19,28,31					
	813-732-3F	RES,732K,.1W,1%,RN60	4	0047	EA	1.0	30.0
	REF DESIGNATORS	R7					
	820-101-10	CAP DIP MICA 100PF 1000V	4	0049	EA	3.0	30.0
	REF DESIGNATORS	C19-21					
	822-472-MK	CAP 4700PF 1000V MKP10	4	0050	EA	2.0	30.0
	REF DESIGNATORS	C2,3					
	821-102-CK	CAP 1000PF 200V 10%	4	0051	EA	3.0	30.0
	REF DESIGNATORS	C25-27					
	821-222-CK	CAP CK05 50V 10% 2200PF A	4	0052	EA	1.0	30.0
	REF DESIGNATORS	C13					
	821-224-CK	CAP CK05-50V 10% .22UF A	4	0054	EA	1.0	30.0
	REF DESIGNATORS	C7					
	821-102-NP	CAP 1000PF 50V NP0 5%	4	0055	EA	1.0	30.0
	REF DESIGNATORS	C10					
	821-104-CK	.1 DISC 50V CK05BX104K A	4	0056	EA	8.0	30.0
	REF DESIGNATORS	C8,9,14,18,22,24,28,29					
	821-332-CK	CAP CK05 50V 10% 3300PF A	4	0057	EA	1.0	30.0
	REF DESIGNATORS	C12					
	821-471-NP	CAP 470PF 100V NP0 5%	4	0058	EA	2.0	30.0
	REF DESIGNATORS	C15,23					
	821-474-CK	CAP CK06 50V 10% .47UF A	4	0060	EA	2.0	30.0
	REF DESIGNATORS	C6,17					
	822-225-60	CAP FILM 2.2MFD 600V	4	0062	EA	1.0	30.0
	REF DESIGNATORS	C1					
	822-104-PC	CAP .1UF 100V POLYCARB	4	0063	EA	1.0	30.0
	REF DESIGNATORS	C16					
	824-687-01	CAP ELECT 680MFD 160V RAD	4	0065	EA	2.0	30.0
	REF DESIGNATORS	C4,5					
	823-106-25	CAP,TANT,10UF,25V,10%,RAD	4	0066	EA	1.0	30.0
	REF DESIGNATORS	C30					
	824-566-25	CAP ELECT 56MFD 25V RAD	4	0068	EA	1.0	30.0
	REF DESIGNATORS	C11					
	832-P29-07	P PN2907 40V AM/SW T A	4	0069	EA	1.0	30.0
	REF DESIGNATORS	Q7					
	842-450-IR	N CHAN 500V 14A TO218	4	0070	EA	2.0	30.0
	REF DESIGNATORS	Q1,2					
	842-700-0X	XISTOR 2N7000 NCHAN 60 A	4	0072	EA	2.0	30.0
	REF DESIGNATORS	Q5,6					
	842-MJE-20	N MJE200 5A 25V TO-126	4	0074	EA	1.0	30.0
	REF DESIGNATORS	Q3					
	842-MJE-21	P MJE210 5A 25V TO-126	4	0076	EA	1.0	30.0
	REF DESIGNATORS	Q4					
	845-M45-0X	DIODE ULTRAFAST 3A 500V	4	0078	EA	3.0	30.0
	REF DESIGNATORS	D3,4,7					
	843-474-4A	1N4744A 1W 15V ZENER MO A	4	0080	EA	4.0	30.0
	REF DESIGNATORS	D1,2,11,12					
	845-M41-00	DIODE,ULTRAFAST 3A 1000V	4	0082	EA	2.0	30.0
	REF DESIGNATORS	D13,14					
	845-M81-00	DIODE 1000V 8A MUR8100	4	0083	EA	2.0	30.0
	REF DESIGNATORS	D5,6					

ELGAR CORPORATION
BILL OF MATERIALS INQUIRY
SINGLE LEVEL

EL

MATERIAL ITEM	DESCRIPTION		ITM TPE	SEQ	UM	QTY PER	LEAD TIME
5151561-01	A PWA,BATTERY CHARGER		4		EA	2.0	10.0
845-U40-02	DIODE, ULTRAFAST UF4002		4	0084	EA	1.0	30.0
REF DESIGNATORS	D8						
844-414-8X	RECSIG 1N4148 100V		4	0086	EA	2.0	30.0
REF DESIGNATORS	D9,16						
845-581-7X	RECTIFIER 1A 20V	A	4	0088	E	4.0	30.0
REF DESIGNATORS	D10,15,17,18						
849-101-4C	QUAD PRECISION OP AMP		4	0090	EA	1.0	30.0
REF DESIGNATORS	U5						
849-384-5X	IC UC3845 PWM CONTROLLER		4	0091	EA	1.0	30.0
REF DESIGNATORS	U3						
848-CNY-17	OPTOCOUPLER CNY17-2		4	0094	EA	3.0	30.0
REF DESIGNATORS	U2,4,6						
849-DG3-00	ANALOG SW DUAL:DG300ACJ		4	0096	EA	1.0	30.0
REF DESIGNATORS	U1						
858-340-09	FUSE CLIP PCB 13-32	A	4	0098	EA	2.0	30.0
REF DESIGNATORS	XF1						
858-KLM-05	FUSE,FAST 5ADC 600V		4	0100	EA	1.0	30.0
REF DESIGNATORS	F1						
5151583-01	A INDUCTOR,COUPLED		4	0102	EA	1.0	30.0
REF DESIGNATORS	L1						
5151584-01	A XFMR, MOSFET DRIVE		4	0104	EA	1.0	30.0
REF DESIGNATORS	T1						
856-107-11	09-72-1071 7P GOLD PCMN	A	4	0107	EA	1.0	30.0
REF DESIGNATORS	J1						
856-111-11	09-72-1111 11P GOLD PCM	A	4	0108	EA	1.0	30.0
REF DESIGNATORS	J2						
9151604-01	A HEATSINK,BATTERY CHGR		4	0116	EA	2.0	40.0
REF DESIGNATORS							
9151530-01	A CLAMP, XFMR		4	0120	EA	1.0	40.0
REF DESIGNATORS							
9151606-01	A SPACER,BATTERY CHGR		4	0122	EA	1.0	30.0
REF DESIGNATORS	.						
9151607-01	A FILLER, BATTERY CHGR		4	0124	EA	4.0	30.0
REF DESIGNATORS	.						
819-501-99	POT MISC 25TURN 3299W-5	A	4	0135	EA	1.0	30.0
REF DESIGNATORS	R18						
110DA20-36	SCREW 6-32X2 1/4 PPH SS		4	0140	EA	2.0	30.0
REF DESIGNATORS	.						
109-216-2X	WASHER,FIBER,#6	A	4	0141	EA	2.0	20.0
REF DESIGNATORS	.						
111DA20-01	WASHER #6 FLAT S/S		4	0142	EA	2.0	1.0
REF DESIGNATORS	.						
111DC20-01	WASHER #6 SPLIT LK S/S		4	0143	EA	2.0	1.0
REF DESIGNATORS	.						
112DA20-01	NUT #6 STD HEX		4	0144	EA	2.0	1.0
REF DESIGNATORS	.						
896-TY2-3M	EXP. TYRAP TY23M/WRN-3	A	4	0145	EA	2.0	20.0
REF DESIGNATORS	.						
109-T02-20	TO-220-ISOLATOR	A	4	0147	EA	2.0	30.0
REF DESIGNATORS	XD5,XD6						
109-T24-7X	SILPAD INSULATOR TO247		4	0148	EA	2.0	30.0
REF DESIGNATORS	XQ1,XQ2						

ELGAR CORPORATION
BILL OF MATERIALS INQUIRY
SINGLE LEVEL

EL

MATERIAL ITEM	DESCRIPTION		ITM TPE	SEQ	UM	QTY PER	LEAD TIME
5151561-01	A PWA,BATTERY CHARGER		4		EA	2.0	10.0
111CA20-01	WASHER #4 FLAT S/S		4	0149	EA	12.0	1.0
REF DESIGNATORS	.						
110CA20-08	SCREW 4-40X1/2 PPH SS		4	0150	EA	2.0	1.0
REF DESIGNATORS	.						
111CC20-01	WASHER #4 SPLIT LK S/S		4	0151	EA	8.0	1.0
REF DESIGNATORS	.						
112CA20-01	NUT #4-40 HEX S/S		4	0152	EA	4.0	1.0
REF DESIGNATORS	.						
110CA20-06	SCREW 4-40X3/8 PPH S/S		4	0153	EA	6.0	1.0
REF DESIGNATORS	.						
109-962-03	HUMISEAL SPRAY	S	4	0300	EA	0.0	1.0
REF DESIGNATORS	A/R						
109-499-45	ADHESIVE GEL 499		4	0301	OZ	0.0	1.0
REF DESIGNATORS	A/R						
109-467-MP	POLYCARB SHT .01THK 3M467		4	0302	EA	0.0	30.0
REF DESIGNATORS	A/R						
109-961-2X	SEALANT LOCTITE #222	S	4	0303	EA	0.0	1.0
REF DESIGNATORS	A/R						
109-499-46	ACTIVATOR 710 USE W/499		4	0304	OZ	0.0	1.0
REF DESIGNATORS	A/R						

<< END OF REPORT >>

ASSY PART NO.	TITLE	SHT. 1 OF 3	REV.	ELGAR
5151592-[ ]	DISPLAY PLATE ASSY	SHT. — IS — SIZE	A	

DRAWN	DATE	PROJ. ENG.	DATE
VAL SCHNEIDER	3-20-92	6/3/92	
CHECKED Valerie Schneider	DATE 6-4-92	QA-REL.	DATE 920605

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	◢	◢							PROD REL PER DRN R0332	SCHNEIDER	Schneider		

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X								DISPLAY PLATE ASSY-GUPS 2400	W/BATTERIES
2		X							DISPLAY PLATE ASSY-GUPS 2400	W/DC-DC CONVERTER
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

1001030-01

ORT: BOM01-A
E : 09:59

ELGAR CORPORATION
BILL OF MATERIALS INQUIRY
SINGLE LEVEL

06/04/92

EL	MATERIAL ITEM	DESCRIPTION		ITM TPE	SEQ	UM	QTY PER	LEAD TIME
	5151592-01	A DISPLAY PANEL ASSEMBLY		6		EA		0.0
	5151565-01	A PWA, DISPLAY		4	0001	EA	1.0	10.0
	REF DESIGNATORS							
	9151528-01	C PLATE COVER,FRONT		4	0002	EA	1.0	5.0
	REF DESIGNATORS							
	848-470-7X	HOLDER LED PANEL MOUNT	A	4	0003	EA	5.0	30.0
	REF DESIGNATORS							
	109-632-07	STANDOFF 636X.44RD.25	SS	4	0004	EA	6.0	30.0
	REF DESIGNATORS							
	110DG20-04	SCREW 6-32X1/4 PFH 100	SS	4	0005	EA	2.0	1.0
	REF DESIGNATORS							
	110DA20-05	SCREW 6-32X5/16 PPH	A	4	0006	EA	6.0	1.0
	REF DESIGNATORS							
	109-961-2X	SEALANT LOCTITE #222	S	4	0007	EA	0.0	1.0
	REF DESIGNATORS	AR						
	111DC20-01	WASHER #6 SPLIT LK S/S		4	0008	EA	6.0	1.0
	REF DESIGNATORS							
	111DA20-01	WASHER #6 FLAT S/S		4	0009	EA	6.0	1.0
	REF DESIGNATORS							

<< END OF REPORT >>

ORT: BOM01-A
E : 09:59

ELGAR CORPORATION
BILL OF MATERIALS INQUIRY
SINGLE LEVEL

06/04/92

EL

MATERIAL ITEM	DESCRIPTION	ITM TPE	SEQ	UM	QTY PER	LEAD TIME
5151592-02	A DISPLAY PLATE ASSY RAY	6				0.0
5151565-01	A PWA, DISPLAY	4	0001	EA	1.0	10.0
REF DESIGNATORS						
9151528-02	C DISPLAY PLATE RAYTHEON	4	0002	EA	1.0	5.0
REF DESIGNATORS						
848-470-7X	HOLDER LED PANEL MOUNT A	4	0003	EA	5.0	30.0
REF DESIGNATORS						
109-632-07	STANDOFF 636X.44RD.25 SS	4	0004	EA	6.0	30.0
REF DESIGNATORS						
110DG20-04	SCREW 6-32X1/4 PFH 100 SS	4	0005	EA	2.0	1.0
REF DESIGNATORS						
110DA20-05	SCREW 6-32X5/16 PPH A	4	0006	EA	6.0	1.0
REF DESIGNATORS						
109-961-2X	SEALANT LOCTITE #222 S	4	0007	EA	0.0	1.0
REF DESIGNATORS	AR					
111DC20-01	WASHER #6 SPLIT LK S/S	4	0008	EA	6.0	1.0
REF DESIGNATORS						
111DA20-01	WASHER #6 FLAT S/S	4	0009	EA	6.0	1.0
REF DESIGNATORS						

<< END OF REPORT >>

ASSY PART NO.	TITLE	SHT. 1 OF 2	REV.	ELGAR
5151565-01	PWA, DISPLAY	SHT. IS SIZE	C	

DRAWN	DATE	PROJ. ENG.	DATE
L. BURKE	4-15-92		5/17/92
CHECKED Piest	DATE 4/21/92	QA-REL.	DATE 92 05 19

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	X								PRODUCTION RELEASE PER DRN RØ311	LKB	Piest		5/17/92
B	■								REVISED PER ECN # 8345		STAPP		3-23-94
C	■								REVISED PER ECN # 8420A		STAPP		3-23-94

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X								PWA, DISPLAY	MSS 3
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

1001030-01

BILL OF MATERIAL
AS OF 03/22/94

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 110 SUB-ASSY MISC

5151565-01 OPCODE: 3 REV: C PWA,DISPLAY
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

OP: ORDER POLICY CODE
REQ N=PART OPTIONAL
Y=PART REQUIRED
PF: N=PART DOES NOT PRINT ON SALES ORDER
Y=PART PRINTS ON SALES ORDER W/O PRICE
P=PART PRINTS ON SALES ORDER WITH PRICE

PART NUMBER	DESCRIPTION	OP	RV	ITEM NO	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQ	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
801-271-05	RES, 270 OHM,1/4W,2%,M-F	3		2	1.000	1.000	EA	B	YN	1.000	0	0	R3	00/00/00	99/99/99
801-472-05	RES, 4.7 K, 1/4W,2%,M-F	3		3	2.000	1.000	EA	B	YN	2.000	0	0	R1,2	00/00/00	99/99/99
818-271-SS	RESNET, 270 OHM,6P,SR,SIP	3	A	4	3.000	1.000	EA	B	YN	3.000	0	0	R4,5,6	00/00/00	99/99/99
821-105-CK	CAP, 1UF,50V,10%,CER	3	B	8	3.000	1.000	EA	B	YN	3.000	0	0	C1-3	00/00/00	99/99/99
848-LD1-05	LAMP, LED,TWO COLOR,3PIN	3	A	13	5.000	1.000	EA	B	YN	5.000	0	0	DS1-5	00/00/00	99/99/99
848-S24-26	SPACER, LED,1/4 INCH	3	A	14	5.000	1.000	EA	B	YN	5.000	0	0	XDS1-5	00/00/00	99/99/99
849-H13-2X	HCMOS 74HC132 4X2 NAND ST	3	C	15	1.000	1.000	EA	B	YN	1.000	0	0	U1	00/00/00	99/99/99
849-H16-4X	HCMOS 74HC164 9HIFT REG	3	A	16	2.000	1.000	EA	B	YN	2.000	0	0	U2,3	00/00/00	99/99/99
860-TPB-11	SWITCH,SPDT,PC,MOMENTARY	3	A	18	3.000	1.000	EA	B	YN	3.000	0	0	S1-3	00/00/00	99/99/99
856-103-4E	10 PIN HEADER W/LOCKS S	3		21	1.000	1.000	EA	B	YN	1.000	0	0	J1	00/00/00	99/99/99
2151565-01	A/W,DISPLAY	3	B	28	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
6151565-01	SCHEMATIC,DISPLAY	3	B	29	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
9151565-01	PWB,DISPLAY	3	B	30	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
821-103-CK	CAP, .01UF,50V,10%,CER	3	B	32	1.000	1.000	EA	B	YN	1.000	0	0	C4	00/00/00	99/99/99
109-962-03	HUMISEAL SPRAY S	3	B	300	.000	1.000	EA	F	YN	.000	0	0	A/R	00/00/00	99/99/99
109-499-45	ADHESIVE GEL 499	3	A	301	.000	1.000	OZ	F	YN	.000	0	0	AR	00/00/00	99/99/99
109-499-46	ACTIVATOR 710 USE W/499	3	A	302	.000	1.000	OZ	F	YN	.000	0	0	AR	00/00/00	99/99/99

ASSY PART NO.	TITLE	SHT. 1 OF 2	REV.	ELGAR
5151563-01	PWA, OUTPUT FILTER	SHT. ___ IS ___ SIZE	E	

DRAWN George Lopez	DATE 5-22-92	PROJ. ENG. [signature]	DATE 5/22/92
CHECKED [signature]	DATE [illegible]	QA-REL. [signature]	DATE 9205-22

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	■								PRODUCTION RELEASE PER DRN R0318	[signature]	DFP	[signature]	3/22/94
B	■								REVISED PER ECN 8345	[signature]	STAPP	[signature]	3/21/94
C	■								REVISED PER ECN 8419	[signature]	STAPP	[signature]	3/21/94
D	■								REVISED PER ECN 8495	[signature]	STAPP	[signature]	3/21/94
E	■								REVISED PER ECN 8907	[signature]	STAPP	[signature]	3/21/94

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X								OUTPUT FILTER, PWA	GUPS2400
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

1001030-01

BILL OF MATERIAL
AS OF 03/17/94

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 110 SUB-ASSY MISC

OP: ORDER POLICY CODE
REQ: N=PART OPTIONAL
Y=PART REQUIRED
PF: N=PART DOES NOT PRINT ON SALES ORDER
Y=PART PRINTS ON SALES ORDER W/O PRICE
P=PART PRINTS ON SALES ORDER WITH PRICE

5151563-01 OPCODE: 3 REV: E PWA,OUTPUT FILTER
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQF	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
822-473-25	CAP, .047UF,250V,20%,FILM	3	A	5	2.000	1.000	EA	B	YN	2.000	0	0	C2,3	00/00/00	99/99/99
822-106-25	CAP, 10UF,250V,10%,FILM	3	B	6	1.000	1.000	EA	B	YN	1.000	0	0	C1	00/00/00	99/99/99
5151587-01	AC MONITOR XFMR	3	A	10	1.000	1.000	EA	B	YN	1.000	0	0	T1	00/00/00	99/99/99
T151563-01	OUTPUT FLTR PWA TP	3	A	11	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
856-009-0P	CONN PC PWR 13A 8PINS	3	A	12	1.000	1.000	EA	B	YN	1.000	0	0	J1	00/00/00	99/99/99
856-110-11	09-72-1101 10P GOLD PCM A	3	B	14	1.000	1.000	EA	B	YN	1.000	0	0	J2	00/00/00	99/99/99
861-JTE-12	RELAY 12V SPST 30A SEAL	3	A	15	1.000	1.000	EA	B	YN	1.000	0	0	K1	00/00/00	99/99/99
2151563-01	ARTWORK,OUTPUT FILTER	3	A	16	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
6151563-01	SCHEMATIC,OUTPUT FILTER	3	C	18	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
9151563-01	PWB,OUTPUT FILTER	3	A	20	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
845-400-6X	RECT, 800V,1A,1N4006	3	B	21	1.000	1.000	EA	B	YN	1.000	0	0	D1	00/00/00	99/99/99
896-TY2-3M	EXP. TYRAP TY23M/WRN-3 A	3	B	22	1.000	1.000	EA	F	YN	1.000	0	0		00/00/00	99/99/99
822-105-58	CAP, 1UF,600V,5%,FILM	3		23	1.000	1.000	EA	B	YN	1.000	0	0	C4	00/00/00	99/99/99
807-5R6-05	RES, 5.6 OHM,5W,5%,W-W	3		24	1.000	1.000	EA	B	YN	1.000	0	0	R1	00/00/00	99/99/99
1131226-99	WIRE 26AWG,WHT TEFZEL	3		25	.000	1.000	EA	F	YN	.000	0	0		00/00/00	99/99/99
109-962-03	HUMISEAL SPRAY S	3	B	300	.000	1.000	EA	F	YN	.000	0	0		00/00/00	99/99/99
109-499-45	ADHESIVE GEL 499	3	A	301	.000	1.000	OZ	F	YN	.000	0	0	AR	00/00/00	99/99/99
109-499-46	ACTIVATOR 710 USE W/499	3	A	302	.000	1.000	OZ	F	YN	.000	0	0	AR	00/00/00	99/99/99

ASSY PART NO.	TITLE	SHT. 1 OF 2	REV.	ELGAR
5151564-01	PWA, BATTERY INTERFACE	SHT. ___ IS ___ SIZE	B	

DRAWN Pinto	DATE 4/30/92	PROJ. ENG. Casey K.	DATE 5/7/92
CHECKED J Winterfield	DATE 5/1/92	QA-REL. Timothy Ford	DATE 920507

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	X								PRODUCTION RELEASE PER DRN R03/2	Pint	J Winterfield	J Winterfield	5/1/92
B	X								REVISED PER ECN 8375	S. DeSanti	Pint	Pint	10/8/93

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X									MSS3
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

1001030-01

BILL OF MATERIAL

AS OF 10/05/93

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 110 SUB-ASSY MISC

5151564-01 OPCODE: 3 REV: B PWA,BATTERY INTERFACE
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

OP: ORDER POLICY CODE
REQ: N=PART OPTIONAL
Y=PART REQUIRED
PF: N=PART DOES NOT PRINT ON SALES ORDER.
Y=PART PRINTS ON SALES ORDER W/O PRICE
P=PART PRINTS ON SALES ORDER WITH PRICE

PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQF	DEFAULT QUANTITY	DAYS OFFSET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
9151564-01	PWB,BATTERY INTERFACE	3	A	1	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
2151564-01	A/W,BATTERY INTERFACE	3	A	2	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
6151564-01	SCHEM,BATT INTERFACE	3	B	3	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
856-M30-24	A CONN,3RW,24P,M,PC MNT	3	A	4	1.000	1.000	EA	B	YN	1.000	0	0	J1	00/00/00	99/99/99
856-104-11	09-72-1041 4P GOLD PC M A	3	C	5	1.000	1.000	EA	B	YN	1.000	0	0	J2	00/00/00	99/99/99
109-836-XX	DISCONNECT TAB .250 TAB A	3	D	6	2.000	1.000	EA	B	YN	2.000	0	0	E1,2	00/00/00	99/99/99
109-962-03	HUMISEAL SPRAY S	3	B	300	.000	1.000	EA	F	YN	.000	0	0	A/R	00/00/00	99/99/99

ASSY PART NO.	TITLE	SHT. 1 OF 2	REV.	ELGAR
5151566-01	BATTERY CONNECTOR	SHT. IS SIZE	A	

DRAWN	DATE	PROJ. ENG.	DATE
CHECKED	DATE	QA-REL.	DATE

DRAWN: [illegible] Lopez — DATE: 5-11-92 — PROJ. ENG.: [illegible] — DATE: 5/20/92
CHECKED: [illegible] — DATE: 5/20/92 — QA-REL.: [illegible] — DATE: [illegible]

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	X								PRODUCTION RELEASE IAW DRN R0321	[illegible] Lopez	[illegible]	[illegible]	5/22/92

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X								BATTERY CONNECTOR	GUPS2400
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

1001030-01

ELGAR CORPORATION
BILL OF MATERIALS INQUIRY
SINGLE LEVEL

VEL	MATERIAL ITEM	DESCRIPTION		ITM TPE	SEQ	UM	QTY PER	LEAD TIME
	5151566-01	A PWA BATTERY CONNECTOR		4		EA		10.0
	9151566-01	A PWB BATTERY CONNECTOR		4	0001	EA	1.0	40.0
	REF DESIGNATORS							
	2151566-01	A A/W BATTERY CONNECTOR		6	0002	EA	0.0	0.0
	REF DESIGNATORS	REF						
	6151566-01	A SCHEM BATTERY CONNECTOR		6	0003	EA	0.0	0.0
	REF DESIGNATORS	REF						
	856-P30-24	A CONN,3RW,24P,F,PC MNT		4	0004	EA	1.0	30.0
	REF DESIGNATORS	J1						
	1131222-99	WIRE MS 22 600V WHITE	A	4	0007	FT	4.0	0.0
	REF DESIGNATORS	.						
	995-431-27	3/16 HEAT SHRK TUBE BLA	D	4	0008	FT	1.0	20.0
	REF DESIGNATORS	.						
	818-103-PH	A THERMISTOR,10K		4	0009	EA	1.0	30.0
	REF DESIGNATORS	.						
	995-431-34	TUBING HEAT SHRINK 1/8		4	0010	IN	1.0	1.0
	REF DESIGNATORS	.						
	1130314-99	WIRE UL 14 600V WHITE	A	4	0011	FT	20.0	20.0
	REF DESIGNATORS	.						
	107-233-09	FEMALE FASTON 16-14GA		4	0013	EA	16.0	20.0
	REF DESIGNATORS	.						
	109-962-03	HUMISEAL SPRAY	S	4	0300	EA	0.0	1.0
	REF DESIGNATORS	A/R						

<< END OF REPORT >>

ASSY PART NO.	TITLE	SHT. 1 OF 2	REV.	ELGAR
5151626-01	OUTPUT XFMR FINAL ASSY	SHT. — IS — SIZE	C	

DRAWN INNA ROYS	DATE 10-16-92	PROJ. ENG. [illegible]	DATE 10-16-92
CHECKED Val Schmidt	DATE 10-17-92	QA-REL. [illegible]	DATE 10-16-92

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	X								PROD REL PER DIN R0410	I. ROYS	Val Schmidt	CIC	10/16/92
B	X								REVISED PER ECN 8512 DMR	DMR	Val Schmidt	VLS	2/8/93
C	X								REVISED PER ECN 8904	[illegible]	STAFF	Staff	3-21-94

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X									
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

1001030-01

DISTRIBUTION: JOANW -

BILL OF MATERIAL
AS OF 03/17/94

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 110 SUB-ASSY MISC

5151626-01 OPCODE: 3 REV: C OUTPUT XFMR ASSY-FINAL
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

OP: ORDER POLICY CODE
REQ: N=PART OPTIONAL
Y=PART REQUIRED
PF: N=PART DOES NOT PRINT ON SALES ORDER
Y=PART PRINTS ON SALES ORDER W/O PRICE
P=PART PRINTS ON SALES ORDER WITH PRICE

PART NUMBER	DESCRIPTION		OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQF	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
5151534-01	XFMR ASSY MSS-3		3	C	1	1.000	1.000	EA	M	YN	1.000	0	0	T1	00/00/00	99/99/99
5211123-01	XFMR ASSY,CURR,A7		3	E	2	1.000	1.000	EA	B	YN	1.000	0	0	T2	00/00/00	99/99/99
5151605-01	INDUCTOR,FILTER		3	C	3	2.000	1.000	EA	B	YN	2.000	0	0	L1,2	00/00/00	99/99/99
822-505-25	CAP, 5UF,250VAC,10%,FILM		3	A	4	1.000	1.000	EA	B	YN	1.000	0	0	C3	00/00/00	99/99/99
9151600-01	INSULATOR,BRKT,TOROID		3	B	5	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151602-01	INSULATOR,TORIOD CLAMP		3	A	6	2.000	1.000	EA	B	YN	2.000	0	0		00/00/00	99/99/99
9151601-01	CLAMP, TOROID		3	A	7	2.000	1.000	EA	B	YN	2.000	0	0		00/00/00	99/99/99
9151622-01	FOAM INSUL 1.50X4.00		3	A	8	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151621-01	FOAM,2.00 X 1.50		3	B	9	2.000	1.000	EA	B	YN	2.000	0	0		00/00/00	99/99/99
110EA20-24	SCREW 8-32X1.5 PPH SS		3		10	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
111EA20-01	WASHER #8 FLAT S/S		3		11	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
111EC20-01	WASHER #8 SPLIT LK S/S		3		12	2.000	1.000	EA	B	YN	2.000	0	0		00/00/00	99/99/99
112GB20-01	NUT 10-32 STD HEX SS		3		13	5.000	1.000	EA	F	YN	5.000	0	0		00/00/00	99/99/99
111FC20-01	WASHER 10SPLIT LK		3		14	5.000	1.000	EA	F	YN	5.000	0	0		00/00/00	99/99/99
110GA20-06	SCREW 10-32X3/8 PPH SS		3		15	5.000	1.000	EA	F	YN	5.000	0	0		00/00/00	99/99/99
896-TYM-4S	TIE MNT MB4/SH #6 SCREW		3	A	16	2.000	1.000	EA	B	YN	2.000	0	0		00/00/00	99/99/99
896-TY2-5M	EXP. TYRAP TY25M/WRN-6	P	3		17	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
995-431-11	SLEEVING, #4,FIBERGLASS		3	A	18	.300	1.000	FT	F	YN	.300	0	0		00/00/00	99/99/99
110DG20-06	SCR 6-32X3/8 PFH 100DEG	A	3		19	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
110CA20-07	SCREW 4-40X7/16 PPH S/S		3		20	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
111CA20-01	WASHER #4 FLAT S/S		3		21	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
111CC20-01	WASHER #4 SPLIT LK S/S		3		22	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
109-961-2X	SEALANT LOCTITE #222	S	3	A	23	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
995-431-10	SLEEVING, #2,FIBERGLASS		3	A	24	.300	1.000	FT	F	YN	.300	0	0	AR	00/00/00	99/99/99
H151639-01	WIRE KIT,OUTPUT XFMR		3	B	25	1.000	1.000	EA	M	YN	1.000	0	0	AR	00/00/00	99/99/99
995-431-34	SLEEVING, .125",SHRINK		3	-	26	.000	1.000	IN	F	YN	.000	0	0	AR	00/00/00	99/99/99
995-TFE-20	SLEEVING, #20,TEFLON		3	-	27	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
896-TY2-3M	EXP. TYRAP TY23M/WRN-3	A	3	B	28	6.000	1.000	EA	F	YN	6.000	0	0		00/00/00	99/99/99
W151639-01	WIRELIST, XFMR ASSY		3	A	29	.000	1.000	EA	B	YN	.000	0	0	REF	00/00/00	99/99/99
995-431-29	SLEEVING, 1.0",SHRINK		3	-	30	.000	1.000	IN	F	YN	.000	0	0	AR	00/00/00	99/99/99
107-240-15	RING LUG 12-10GA #10STD	A	3		31	1.000	1.000	EA	F	YN	1.000	0	0		00/00/00	99/99/99
111FA20-01	WASHER #10 FLAT	A	3		32	5.000	1.000	EA	F	YN	5.000	0	0		00/00/00	99/99/99

ASSY PART NO.	TITLE	SHT. 1 OF 2	REV.	ELGAR
515153 7-01	HEATSINK ASSY, GUPS2400	SHT. = IS = SIZE	E	

DRAWN VAL SCHNEIDER	DATE 6/25/92	PROJ. ENG. Carey K.	DATE 10/12/92
CHECKED Val Schneider	DATE 10/6/92	QA-REL.	DATE 10/13/92

REVISIONS

REV.	ASSY DASH NO. 01	02	03	04	05	06	07	08	DESCRIPTION	DRAFTER	CHECKED	APPROVED	DATE
A	■								PROD REL PER DRN R0404	V SCHNEIDER	Val S		12/3/92
B	■								REVISED PER ECN 8532	Rutter	Val S	Val	3/17/93
C	■								REVISED PER ECN 8549/A	Rutter	Val S	Val	3/17/93
D	■								REVISED PER ECN 8851		STAPP	A. Stapp	3/21/94
E	■								REVISED PER ECN 8907		STAPP	A. Stapp	3/21/94

ITEM NO.	ASSY DASH NO. 01	02	03	04	05	06	07	08	ASSEMBLY DESCRIPTION	REMARKS
1	X								HEATSINK ASSY - GUPS2400	
2		X								
3			X							
4				X						
5					X					
6						X				
7							X			
8								X		

1001030-01

BILL OF MATERIAL
AS OF 03/17/94

CLASS CODE GROUP: 1 COMMODITY CLASS
CLASS CODE: 110 SUB-ASSY MISC

5151537-01 OPCODE: 3 REV: E H/S ASSY,GUPS2400
MODEL:
ECO NO:
DATE OF LAST ECO: 00/00/00

OP: ORDER POLICY CODE
REQ: N=PART OPTIONAL
Y=PART REQUIRED
PF: N=PART DOES NOT PRINT ON SALES ORDER
Y=PART PRINTS ON SALES ORDER W/O PRICE
P=PART PRINTS ON SALES ORDER WITH PRICE

PART NUMBER	DESCRIPTION	OP	RV	ITEM NO.	QTY PER ASSEMBLY	YIELD FACTR	UM	SC	REQF	DEFAULT QUANTITY	DAYS OFF SET	SEQ	REFERENCE DESIGNATOR	EFFECTIV DATE	OBSOLETE DATE
5151562-01	PWA,CONTROL	3	K	1	1.000	1.000	EA	M	YN	1.000	0	0	A1	00/00/00	99/99/99
5151560-01	PWA,INVERTER POWER	3	F	2	1.000	1.000	EA	M	YN	1.000	0	0	A3	00/00/00	99/99/99
5151559-01	PWA,RECTIFIER BD	3	E	3	1.000	1.000	EA	M	YN	1.000	0	0	A4	00/00/00	99/99/99
5151568-01	CBL,INTERFACE ASSY	3	B	4	1.000	1.000	EA	M	YN	1.000	0	0		00/00/00	99/99/99
9151538-01	HEATSINK,POWER BOARD	3	C	5	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151616-01	SHIELD HEATSINK ASSY	3	A	6	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151523-01	AIR BAFFLE-RIGHT	3	A	7	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
5151586-01	PWA, PROCESSOR BOARD	3	M	8	1.000	1.000	EA	M	YN	1.000	0	0	A2	00/00/00	99/99/99
9151542-01	INSULATOR	3	A	9	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151543-01	INSULATOR	3	A	10	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
9151524-01	AIR BAFFLE-LEFT	3	A	11	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
109-632-55	SPACER 632X.562F/F HEX	3	A	12	4.000	1.000	EA	B	YN	4.000	0	0		00/00/00	99/99/99
109-632-51	SPACER 632X.50M/F HEX5/16	3	A	13	4.000	1.000	EA	B	YN	4.000	0	0		00/00/00	99/99/99
109-632-88	SPACER 632X1.187F/F HEX	3	A	14	4.000	1.000	EA	B	YN	4.000	0	0		00/00/00	99/99/99
109-632-32	SPACER 632X1.312M/F HEX	3	A	15	2.000	1.000	EA	B	YN	2.000	0	0		00/00/00	99/99/99
111-W00-06	WASHER,FINISHING #6 NYLON	3	A	16	6.000	1.000	EA	B	YN	6.000	0	0		00/00/00	99/99/99
9151575-01	INSULATOR H/S BOTTOM	3	A	17	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
109-632-MM	SPACER M/M 632X.125 .31HE	3	A	18	4.000	1.000	EA	B	YN	4.000	0	0		00/00/00	99/99/99
111CC20-01	WASHER #4 SPLIT LK S/S	3		19	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
110CF20-06	SCREW 4-40X.375 PFH SS	3		20	16.000	1.000	EA	F	YN	16.000	0	0		00/00/00	99/99/99
110CA20-06	SCREW 4-40X3/8 PPH S/S	3		21	8.000	1.000	EA	F	YN	8.000	0	0		00/00/00	99/99/99
111CA20-01	WASHER #4 FLAT S/S	3		22	10.000	1.000	EA	F	YN	10.000	0	0		00/00/00	99/99/99
111DC20-01	WASHER #6 SPLIT LK S/S	3		23	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
110DG20-06	SCR 6-32X3/8 PFH 100DEG A	3		25	6.000	1.000	EA	F	YN	6.000	0	0		00/00/00	99/99/99
110DA20-08	SCREW 6-32X1/2 PPH S/S	3		26	16.000	1.000	EA	F	YN	16.000	0	0		00/00/00	99/99/99
111DA20-01	WASHER #6 FLAT S/S	3		28	18.000	1.000	EA	F	YN	18.000	0	0		00/00/00	99/99/99
110CA20-07	SCREW 4-40X7/16 PPH S/S	3		30	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
110DA20-04	SCREW 6-32X.25 PPH SST A	3		31	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
109-961-22	THERMAL COMPOUND	3	A	32	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
109-961-2X	SEALANT LOCTITE #222 S	3	A	33	.000	1.000	EA	F	YN	.000	0	0	AR	00/00/00	99/99/99
9151603-01	SHIELD,HEATSINK ASSY	3	A	34	1.000	1.000	EA	B	YN	1.000	0	0		00/00/00	99/99/99
810-R20-05	RES, .20 OHM,50W,5%,W-W	3		35	1.000	1.000	EA	B	YN	1.000	0	0	R58	00/00/00	99/99/99
111CG90-01	WASHER #4 FLAT PHEN .016	3	A	36	6.000	1.000	EA	F	YN	6.000	0	0		00/00/00	99/99/99
995-431-27	SLEEVING, .187,SHRINK,B	3	A	37	.000	1.000	FT	F	YN	.000	0	0	AR	00/00/00	99/99/99
107-240-58	RING LUG LNK 16-14GA#6S A	3	A	38	2.000	1.000	EA	F	YN	2.000	0	0		00/00/00	99/99/99
1130314-99	WIRE UL 14 600V WHITE A	3		39	.500	1.000	FT	F	YN	.500	0	0		00/00/00	99/99/99
896-TY2-3M	EXP. TYRAP TY23M/WRN-3 A	3	B	40	1.000	1.000	EA	F	YN	1.000	0	0		00/00/00	99/99/99

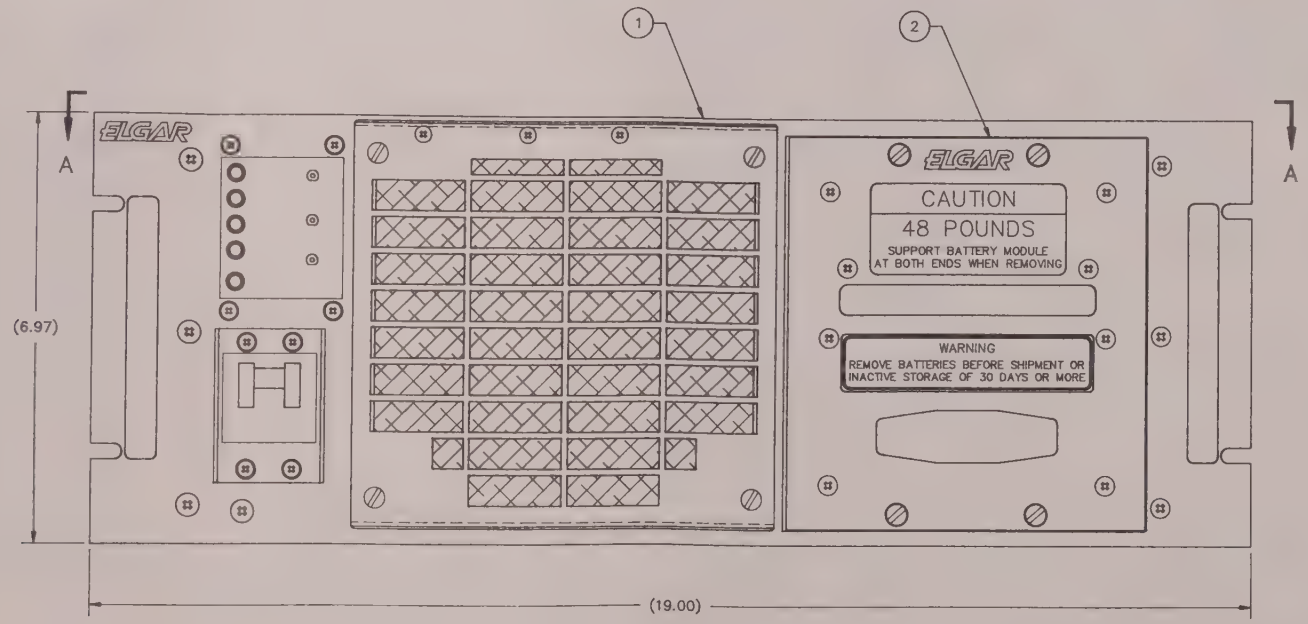
SECTION IV

DIAGRAMS

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PROD REL PER DRN RO	11-18-92	
	B	REVISED IAW ECN 8491	12-14-92	
	C	REVISED IAW ECN 8549/A DMR	3-17-93	
	D	REVISED IAW ECN 8635 DMR	5-5-93	
	E	REVISED IAW ECN 8760	1-5-93	

NOTES:

1. IDENTIFY WITH SERIAL NO., MODEL NO. AND LOT NO. USING SERIAL LABEL (ITEM 6).
2. WIRE UNIT USING WIRE DIAGRAM (ITEM 5).
3. SECURE J2 AND J3 CONNECTOR LOCKS USING RTV (ITEM 20).
4. FOR BRING-UP/CALIBRATION PROCEDURE USE T151629-01.
5. USE ATP T151500-01.



-01 ASSY

5151501E1

END ITEM	GUPS 2400
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING
MATERIAL
FINISH

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CONTRACT NO		
FIRST MADE FOR		
APPROVAL		DATE
DRAWN	SCHNEIDER	11-2-92
CHECKED	SCHNEIDER	11-6-92
PROJ ENG	CASEY K	11-16-92
QA REL	G. LE	11-2-92

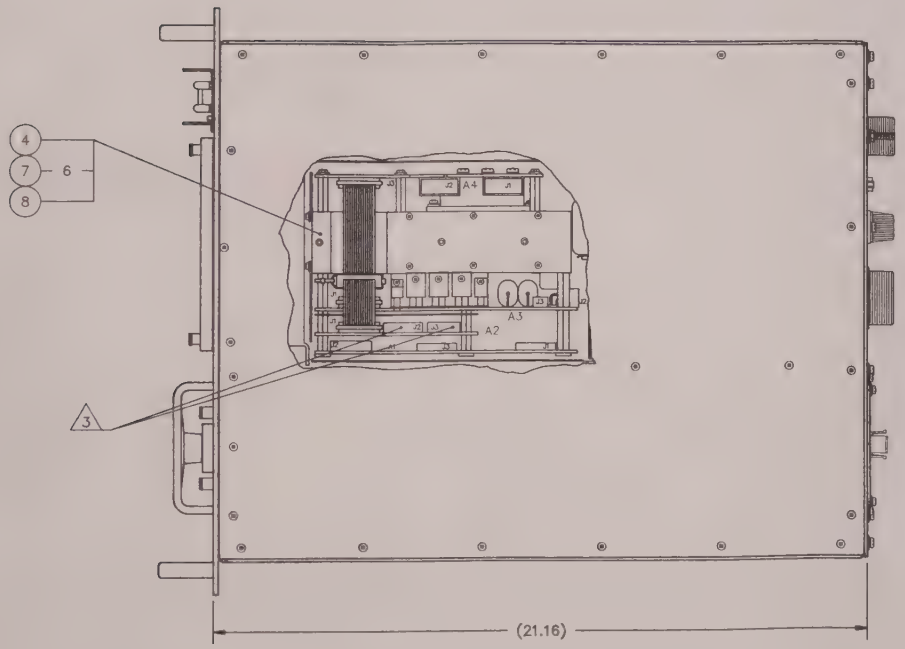
ELGAR

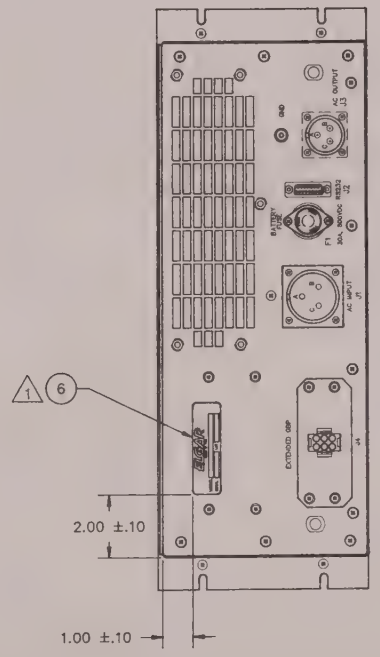
FINAL ASSY
GUPS 2400A

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151501	E

SCALE 1/1 SHEET 1 OF 2

REVISIONS			
ZONE LTR	DESCRIPTION	DATE	APPROVED
	SEE SHEET 1		





VIEW A–A
ROTATED 90° CLOCKWISE

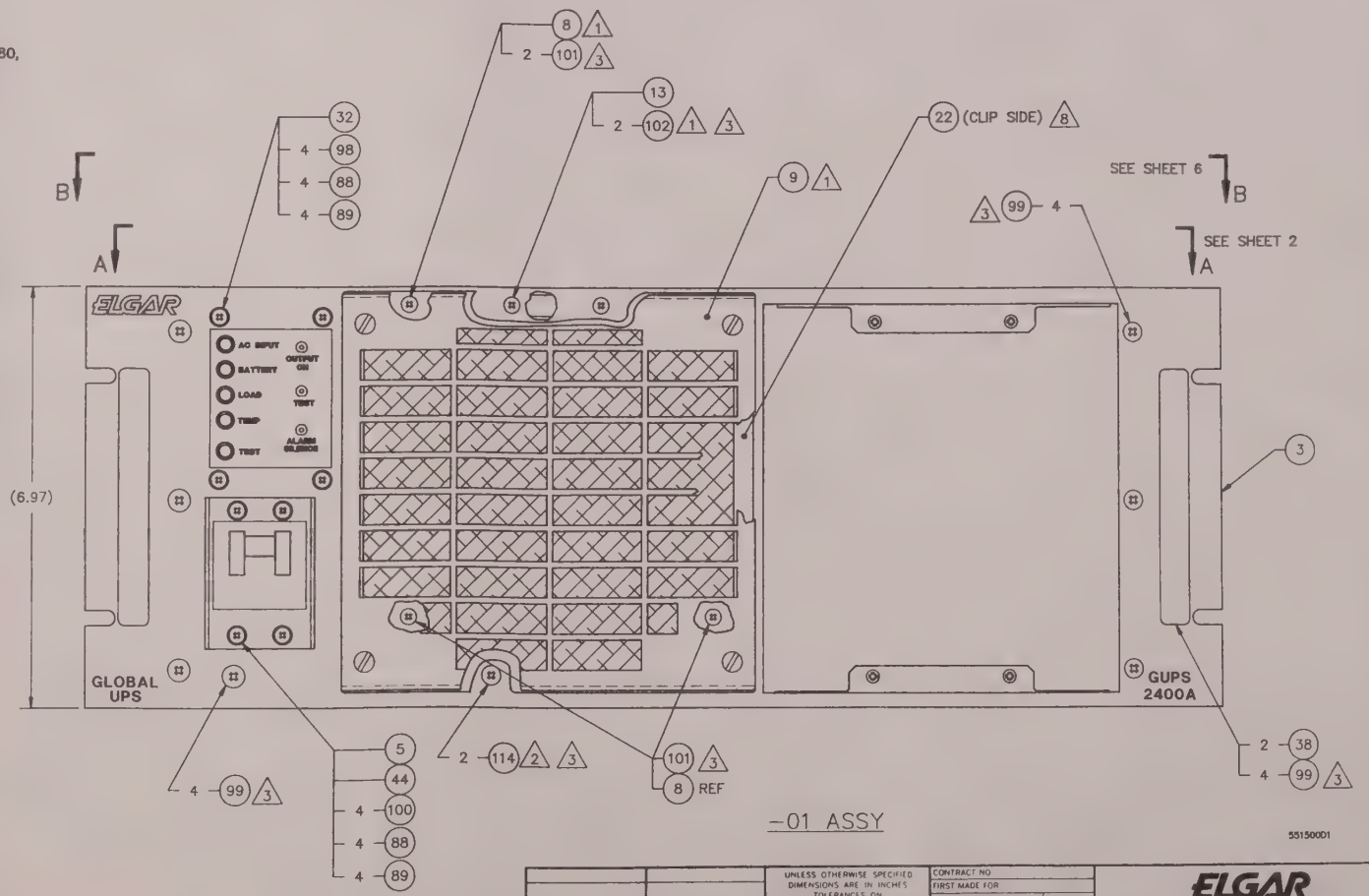
551501E2

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151501	
SCALE		SHEET	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PROD REL PER DRN R0425	11-18-92	KUZARA
	B	REVISED IAW ECN 8491	12-14-92	
	C	REVISED IAW ECN 8549/A DMR	12-14-92	
	D	REVISED IAW ECN 8635 DMR	5/5/93	

NOTES:

1. INSTALL BAR STIFFENER, ITEM 13, PRIOR TO FILTER ITEMS 8, 9, AND 22.
2. INSTALL ITEM 99, PRIOR TO FRONT FILTER ITEMS 8,9 AND 22.
3. APPLY THREAD ADHESIVE, (ITEM 36) TO FASTENERS AT ASSEMBLY.
4. REMOVED
5. WIRE CHASSIS WITH HARNESSES AND CABLES (ITEMS 74, 76--80, 85--87 AND 126 USING WIRELISTS (ITEMS 128--132) AND WIRE DIAGRAM (ITEM 47).
6. IDENTIFY WITH ELGAR PN AND LATEST REVISION LEVEL.
7. REMOVE SCREWS SUPPLIED WITH CAPS (ITEM 42) AND REPLACE WITH SCREW (ITEM 125).
8. FOAM SIDE FACES THE INSIDE OF THE CHASSIS.
9. COVER LEADS WITH ITEM 84 (TUBING) THEN CRIMP AND SOLDER LUG.
10. SECURE RESISTORS (ITEM 83) TO CAPACITORS (ITEM 42) USING RTV (ITEM 46).
11. TORQUE SPEC: 16.0 ±1.0 IN/LBS.
12. TORQUE SPEC: 46.0 ±1.0 FT/LBS.
13. FOR BRACKET TO CHASSIS MOUNTING HARDWARE, SEE VIEW G--G ON SHEET 4.
14. ASSEMBLE AND ALIGN PER MANUFACTURING ENGINEERING INSTRUCTIONS.
15. COVER VARISTOR (ITEM 56) WITH 1.25 INCHES OF SHRINK SLEEVE (ITEM 45) AND HEAT SHRINK.
16. SECURE VARISTORS TO LINE FILTER CASE USING RTV (ITEM 46).
17. SECURE CAPS (ITEM 52) TO INSULATOR (ITEM 57) USING RTV (ITEM 46).
18. SOLDER BUS WIRE (ITEM 64) TO CAP LEAD (ITEM 52) AND TO LINE FILTER CASE AS SHOWN.
19. SOLDER 1.0 INCH OF WIRE (ITEM 40) TO CAP LEAD, COVER WITH .50 INCH OF SHRINK TUBE (ITEM 65) AND HEAT SHRINK (4 PLACES). CRIMP 2 WIRES PER LUG (ITEM 50) AND MOUNT AS SHOWN.
20. SPACE GROUND LUG AWAY FROM LINE FILTER CASE USING 1/4--20 HEX NUT.



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS FRACTIONS ANGLES XX ± .03 ± 1/32 ± 1/2° XXX ± .010 DO NOT SCALE THIS DRAWING	CONTRACT NO	ELGAR	
			FIRST MADE FOR	CHASSIS ASSY GUPS 2400A	
		MATERIAL	APPROVAL / DATE		
5151501-01	GUPS 2400		DRAWN LEDFORD 2-26-92		
NEXT ASSY	USED ON		CHECKED SCHNEIDER 10-28-92		
APPLICATION		FINISH	PROJ ENG CASEY 11-16-92	SIZE D / CODE IDENT NO 25965 / DRAWING NO 5151500 / REV D	
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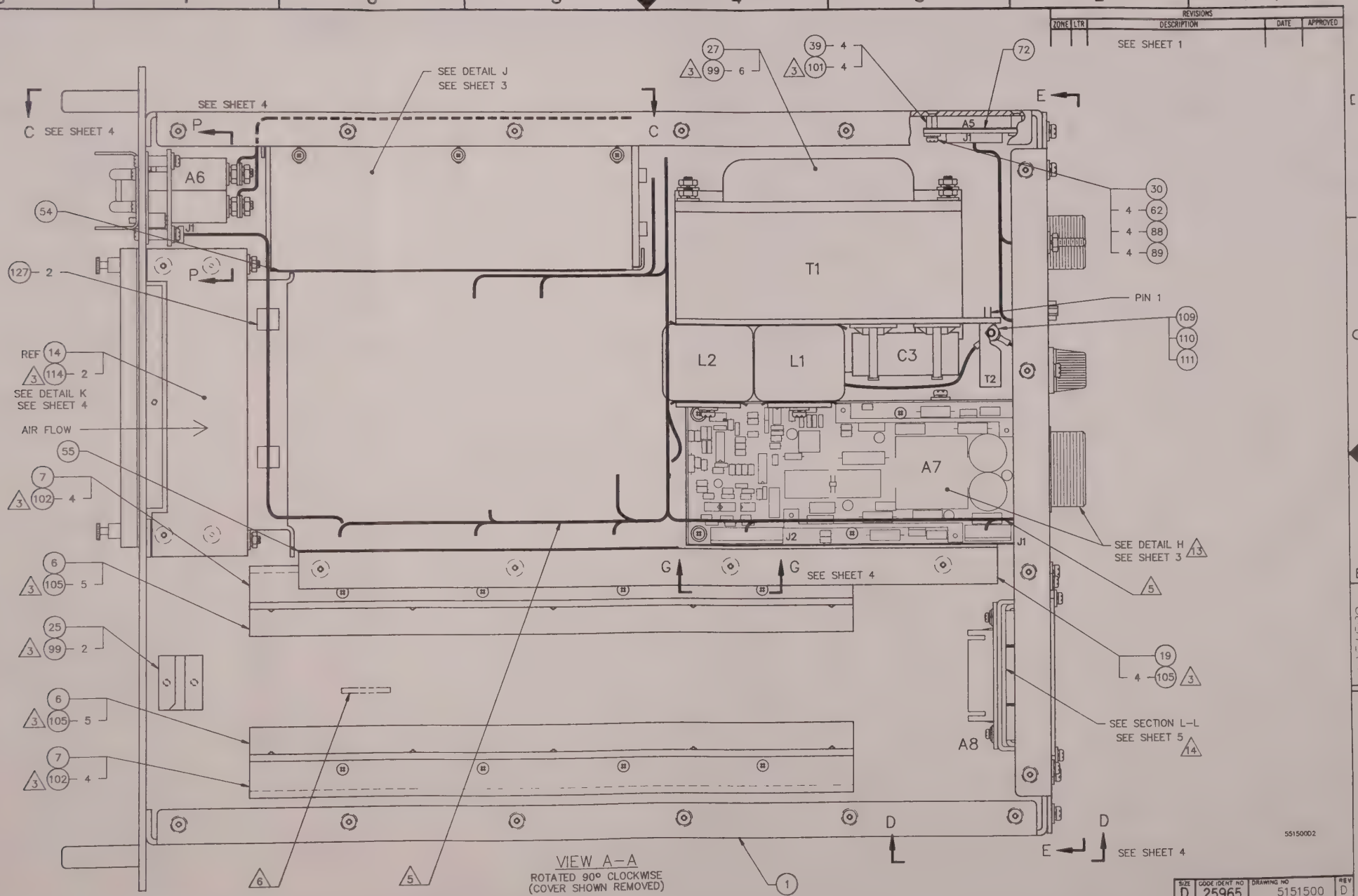
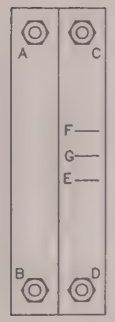
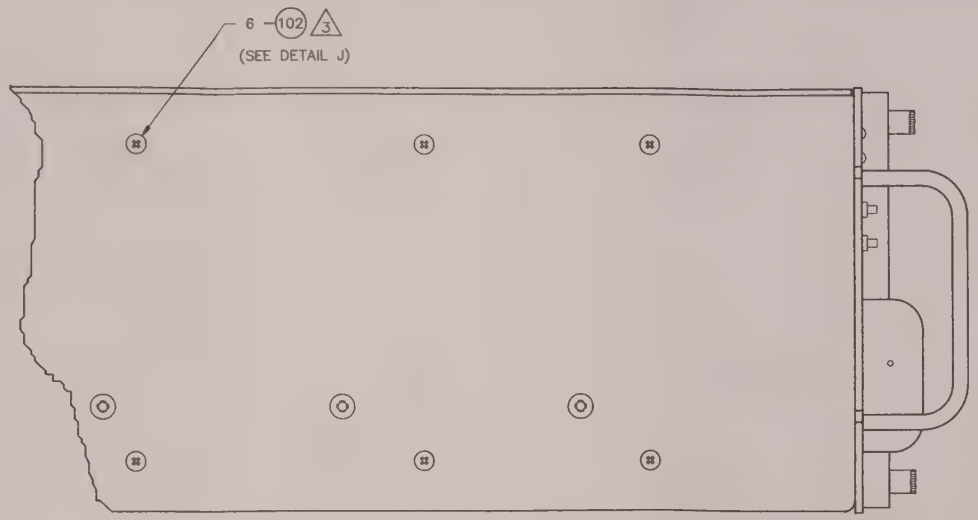

REVISIONS
ZONE LTR DESCRIPTION DATE APPROVED
SEE SHEET 1
SEE DETAIL J
SEE SHEET 3
SEE SHEET 4
C SEE SHEET 4
A6
A5
J1
T1
L2
L1
C3
T2
A7
J2
A8
PIN 1
SEE DETAIL K
SEE SHEET 4
AIR FLOW
SEE DETAIL H
SEE SHEET 3
SEE SHEET 4
SEE SECTION L-L
SEE SHEET 5
SEE SHEET 4
VIEW A-A
ROTATED 90° CLOCKWISE
(COVER SHOWN REMOVED)
55150002
SIZE D
CODE IDENT NO 25965
DRAWING NO 5151500
REV D
SCALE 1/1
SHEET 2 OF 6

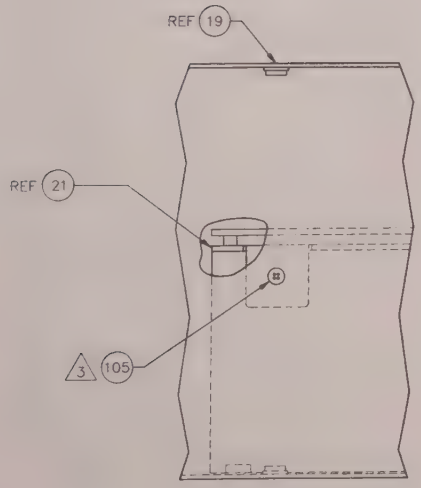
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



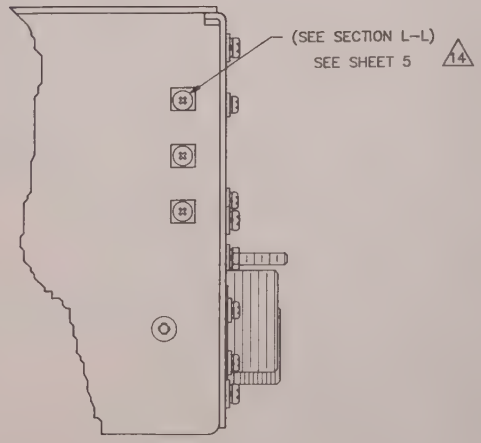
VIEW P–P
SCALE 2/1



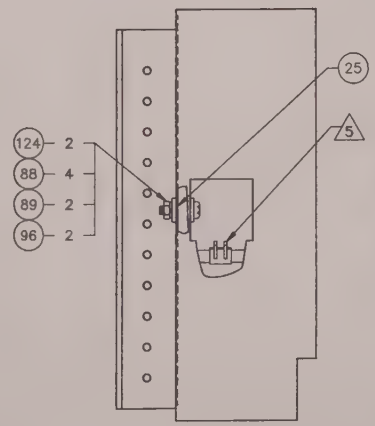
VIEW C–C
SCALE: 1/1

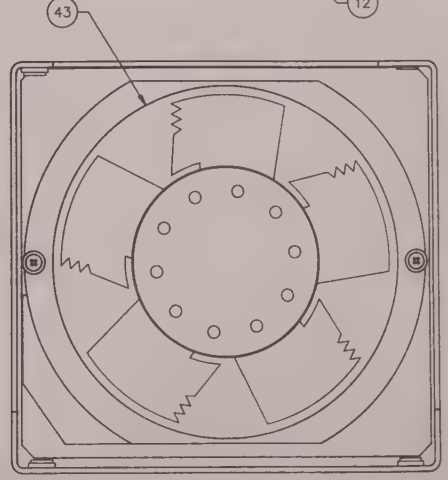


VIEW G–G
SCALE: 1/1



VIEW D–D
SCALE: 1/1



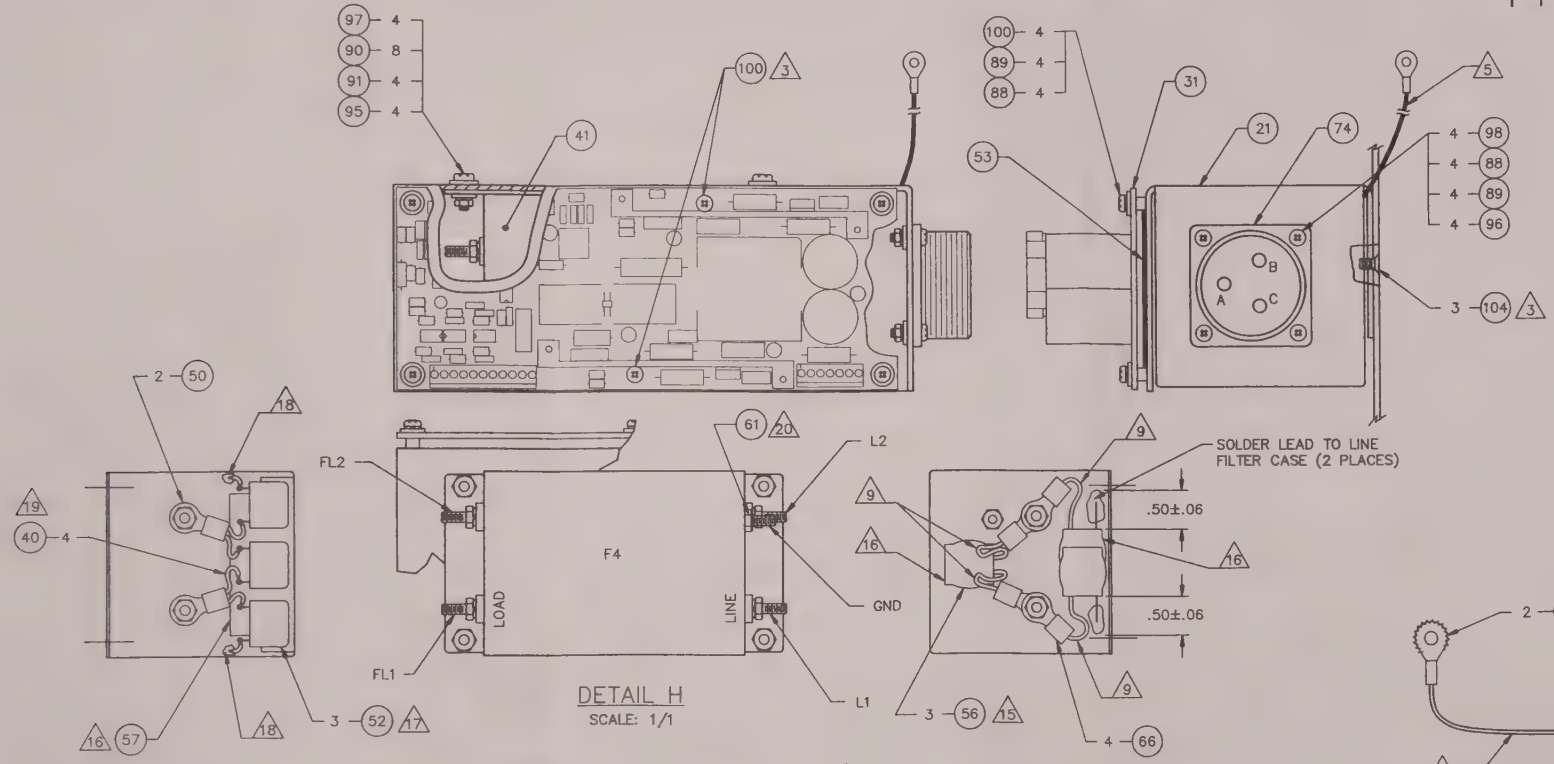


DETAIL K
SCALE: 1/1

55150004

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151500	D
SCALE 1/1		SHEET 4 OF 6	

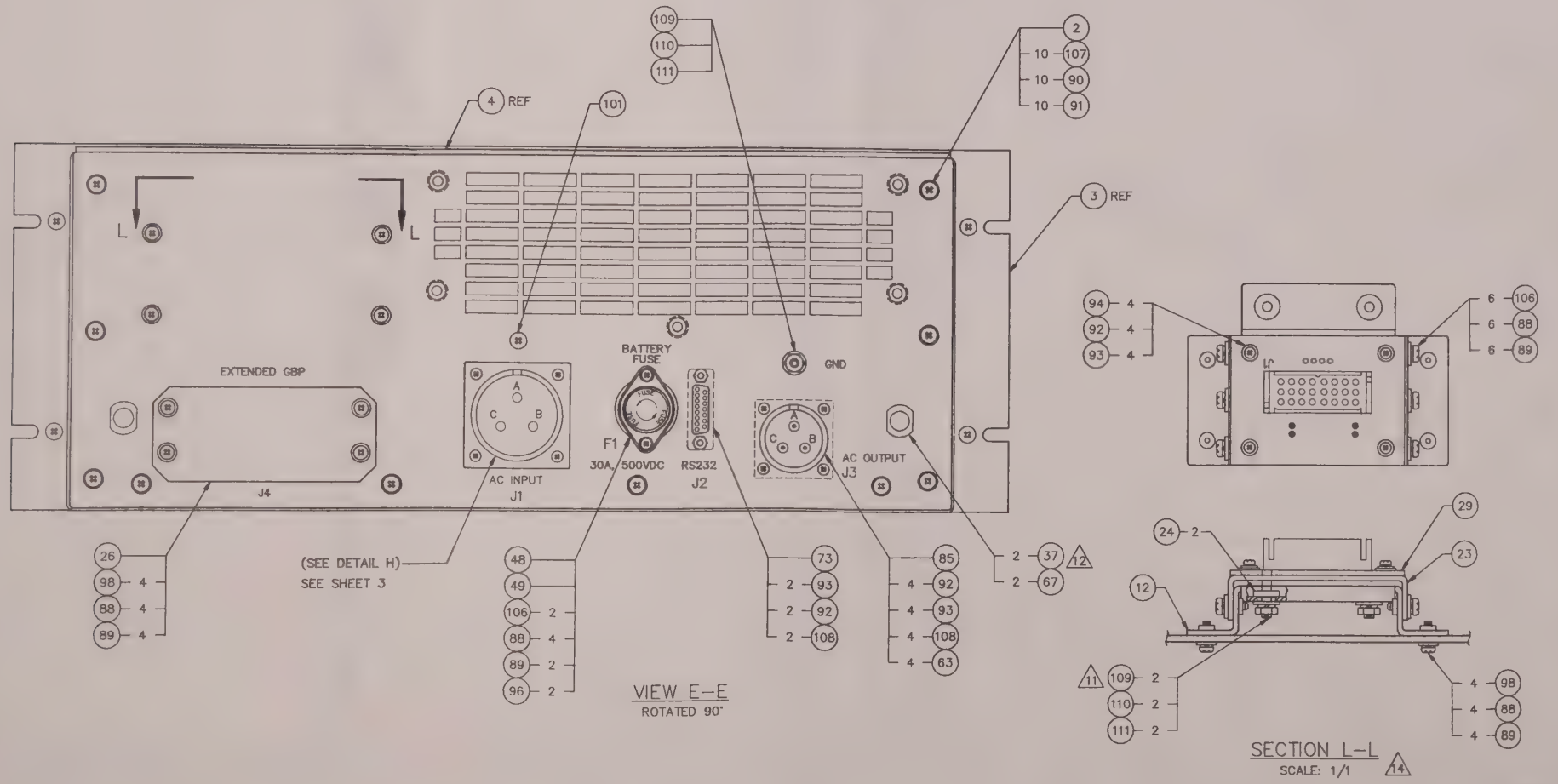
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



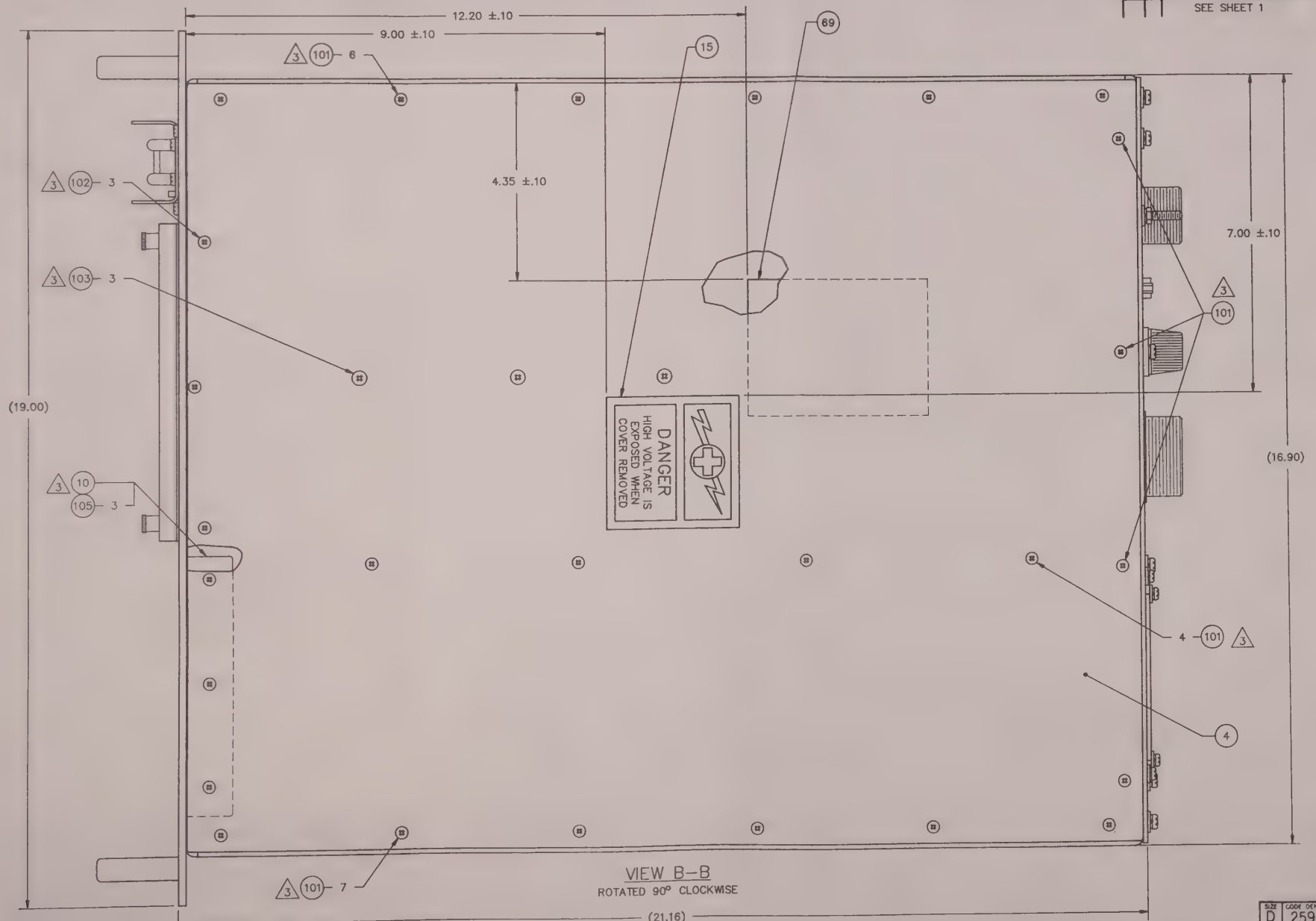
55150003

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151500	D
SCALE 1/1		SHEET 3 OF 6	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151500	D
SCALE 1/1		SHEET 5 OF 6	



VIEW B–B
ROTATED 90° CLOCKWISE

REVISIONS

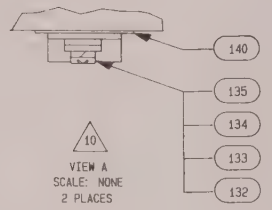
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

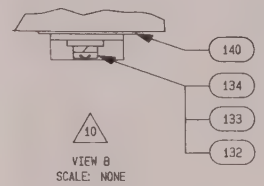
SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151500	D
SCALE 1/1		SHEET 6 OF 6	

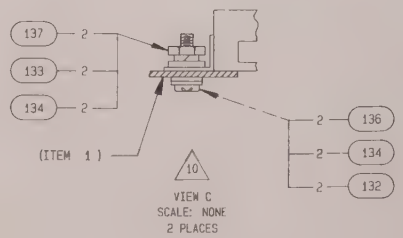
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE IAW DRN A0355	7-1-19	Pkt

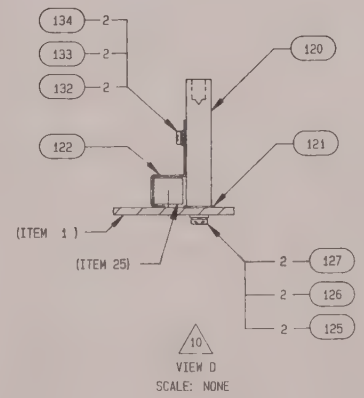
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.
2. THIS DRAWING USED IN CONJUNCTION WITH SCHEMATIC DIAGRAM 6151559.
3. LEAD TIP PROTRUSION .06 (SOLDER SIDE).
4. PERMANENTLY IDENTIFY PART NUMBER, REVISION LETTER AND SERIAL NUMBER IN .12 HIGH CHARACTERS USING RUBBER STAMP, STENCIL OR HAND LETTER. LOCATE APPROXIMATELY AS SHOWN.
5. CONFORMAL COAT TESTED PWA USING ITEM 300. MASK MATING AND ENGAGING SURFACES OF CONNECTORS, TERMINALS, MOUNTING HARDWARE AND AREAS INDICATED.
6. ABBREVIATIONS IN ACCORDANCE WITH MIL-STD-12.
7. HARDWARE SUPPLIED WITH MODULE.
8. WORKMANSHIP IAW ELGAR DOCUMENT 0050004.
9. ELECTROSTATIC DISCHARGE CONTROL PROGRAM FOR PROTECTION OF ELECTRICAL AND ELECTRONIC PARTS, ASSEMBLIES AND EQUIPMENT PER IP 0460007-01.
10. TORQUE SCREWS 4.5 +/-.5 IN/LBS.
11. MOUNT ITEM 24 (R36, 39, 42, 44) FLUSH WITH PRINTED WIRING BOARD.









CAUTION
SENSITIVE ELECTRONIC DEVICES

SEE SEPARATE PARTS LIST

5151537	GUPS2400
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING
MATERIAL
FINISH 5

CONTRACT NO		
FIRST MADE FOR		
APPROVAL		DATE
DRAWN	[illegible]	7-14-92
CHECKED	[illegible]	7/14/92
PROJ ENG	[illegible]	7/14/92
QA REL	[illegible]	7/20/92

ELGAR

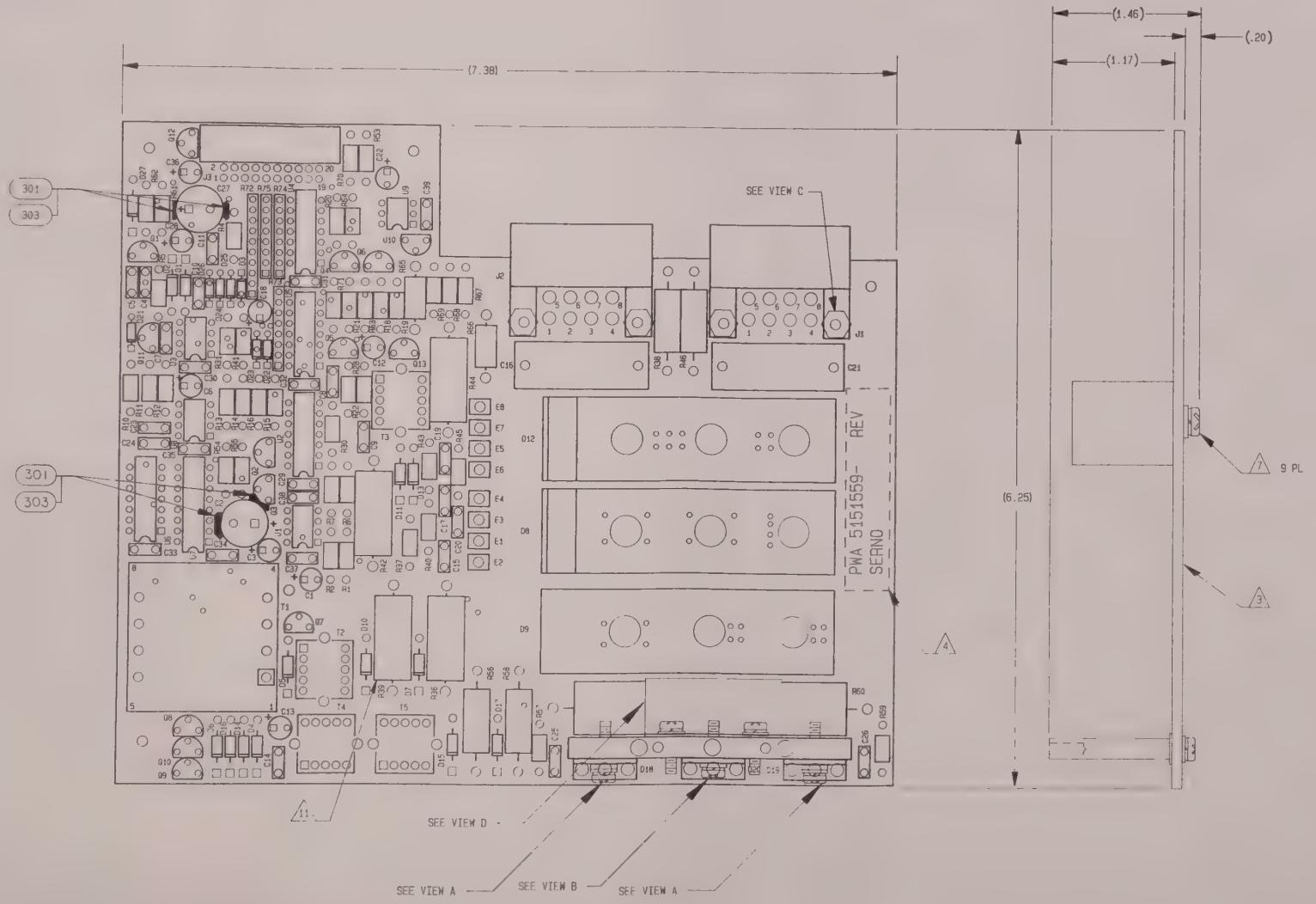
PRINTED WIRING ASSEMBLY, RECTIFIER

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151559	A

SCALE 2/1 SHEET 1 OF 2

THE INFORMATION DISCLOSED HEREIN WAS ORIGINATED BY AND IS THE PROPERTY OF ELGAR CORPORATION AND EXCEPT FOR RIGHTS EXPRESSLY GRANTED TO THE UNITED STATES GOVERNMENT, ELGAR CORPORATION RESERVES ALL PATENT, PROPRIETARY, DESIGN, USE, SALE, MANUFACTURING AND REPRODUCTION RIGHTS THEREIN.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



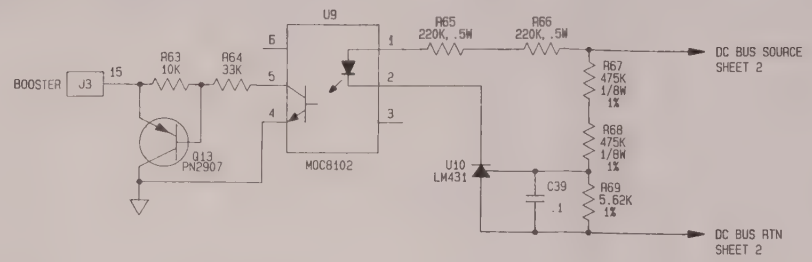
01 ASSY

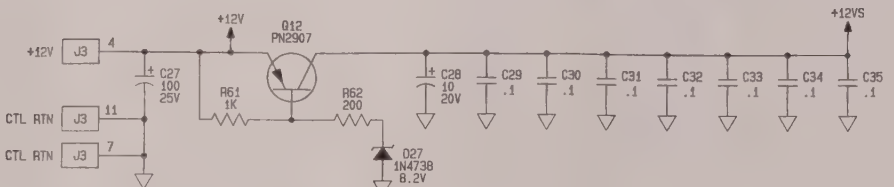
SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151559	A
SCALE 2/1		SHEET 2 OF 2	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE PER DRN A0355	7-15-92	[illegible]

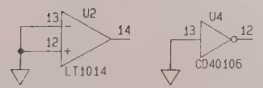
NOTES: UNLESS OTHERWISE SPECIFIED

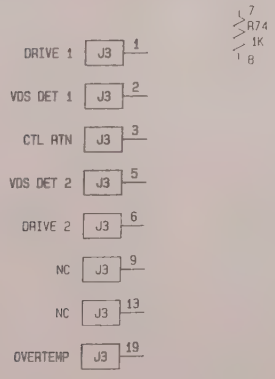
1. INTERPRET DRAWING IAW DOD-STD-100.
2. ALL RESISTOR VALUES ARE IN OHMS 1/4W, 2%. IF RESISTOR TOLERANCE IS NOTED AS 1%, THEN POWER RATING IS 1/10W.
3. ALL CAPACITOR VALUES ARE IN MICROFARADS, 50V, 10%.





SPARES





SUPPLEMENTARY DATA TABLE

REF DES	DEVICE TYPE	+12V	-12v	GND			
U1	AD737	7	4	8			
U2	LT1014	4	11				
U3	LM331	8		4			
U4	40106	14		7			
U5	LM339	3		12			
U6	14081	14		7			
U7	14050	1		8			
U8	LM555	8		1			

REFERENCE DESIGNATIONS	
HIGHEST	NOT USED
R75	R3, 8, 17, 23-27, 29,
C39	R32-35, 47-52
D27	
Q13	
U10	
J3	
T5	
E8	

5151559	GUPS2400
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING
MATERIAL
FINISH

THE INFORMATION DISCLOSED HEREIN WAS ORIGINATED BY AND IS THE PROPERTY OF ELGAR CORPORATION AND EXCEPT FOR RIGHTS EXPRESSLY GRANTED TO THE UNITED STATES GOVERNMENT ELGAR CORPORATION RESERVES ALL PATENT, PROPRIETARY DESIGN, USE, SALE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO

CONTRACT NO		
FIRST MADE FOR		
APPROVAL		DATE
DRAWN	[illegible]	7-15-92
CHECKED	[illegible]	7/15/92
PROJ ENG	[illegible]	7/15/92
QA REL	[illegible]	7/15/92

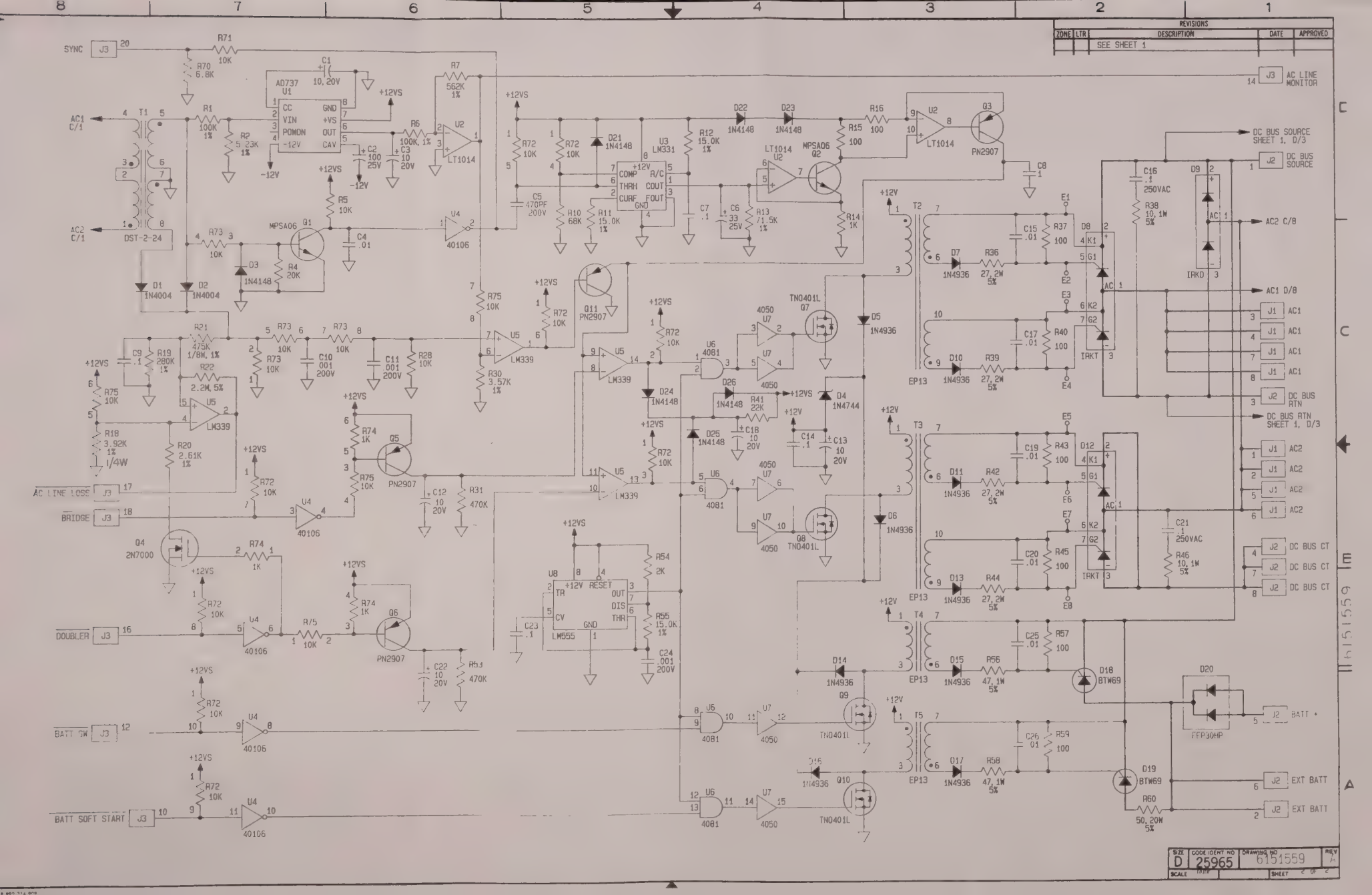
ELGAR

SCHEMATIC DIAGRAM, RECTIFIER

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	6151559	-

SCALE NONE SHEET 1 OF 1

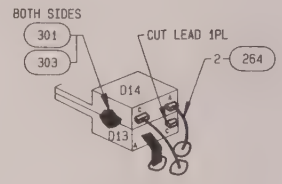
6151559


REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVED
SEE SHEET 1
SYNC J3 20
AC1 C/1
AC2 C/1
DST-2-24
AD737
LT1014
MPSA06
TN0401L
PN2907
LM339
LM555
4081
4050
40106
2N7000
EP13
EFP30HP
BTW69
IRKD
IRKT
AC LINE LOSS J3 17
BRIDGE J3 18
DOUBLER J3 16
BATT SW J3 12
BATT SOFT START J3 10
J3 AC LINE MONITOR 14
DC BUS SOURCE SHEET 1, D/3
DC BUS SOURCE J2 1
AC2 C/8
AC1 D/8
DC BUS RTN
DC BUS RTN SHEET 1, D/3
AC1 J1 1
AC1 J1 4
AC1 J1 7
AC1 J1 8
AC2 J1 1
AC2 J1 2
AC2 J1 5
AC2 J1 6
DC BUS CT J2 4
DC BUS CT J2 7
DC BUS CT J2 8
BATT + J2 5
EXT BATT J2 6
EXT BATT J2 2
SIZE D
CODE IDENT NO 25965
DRAWING NO 6151559
REV A
SCALE
SHEET 2 OF 2
6151559

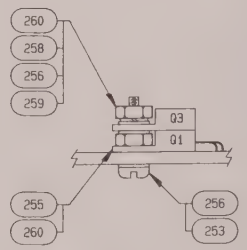
NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.
2. THIS DRAWING USED IN CONJUNCTION WITH SCHEMATIC DIAGRAM 5151562.
3. MAXIMUM LEAD TIP PROTRUSION .075 (SOLDER SIDE).
4. PERMANENTLY IDENTIFY PART NUMBER, REVISION LETTER AND SERIAL NUMBER IN .12 HIGH CHARACTERS USING RUBBER STAMP, STENCIL OR HAND LETTER. LOCATE APPROXIMATELY AS SHOWN.
5. CONFORMAL COAT TESTED PWA USING ITEM 300. MASK MATING AND ENGAGING SURFACES OF CONNECTORS, TERMINALS, MOUNTING HARDWARE AND AREAS INDICATED.
6. ABBREVIATIONS IN ACCORDANCE WITH MIL-STD-12.
7. WORKMANSHIP IAW ELGAR DOCUMENT 0050004.
8. ELECTROSTATIC DISCHARGE CONTROL PROGRAM FOR PROTECTION OF ELECTRICAL AND ELECTRONIC PARTS, ASSEMBLIES AND EQUIPMENT PER IP 0460007-01.
9. TORQUE SCREWS 4.5 +/-.5 IN/LBS.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	C	PRODUCTION RELEASE PER DRN A0400	10 5/92	PRESTON



VIEW A
SCALE: NONE
A



VIEW B
B

VIEW C
6 PLACES
(Q4-Q7, U19, U22)

CAUTION
SENSITIVE ELECTRONIC DEVICES

SEE SEPARATE PARTS LIST

5151537	GUPS2400
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING

MATERIAL

FINISH 5

CONTRACT NO		
FIRST MADE FOR		
APPROVAL		DATE
DRAWN	JW	10/6/92
CHECKED		
PROJ ENG		
QA REL		

ELGAR

PRINTED WIRING ASSEMBLY, CONTROL

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151562	C

SCALE 2/1 SHEET 1 OF 3

THE INFORMATION DISCLOSED HEREIN WAS ORIGINATED BY AND IS THE PROPERTY OF ELGAR CORPORATION AND EXCEPT FOR RIGHTS EXPRESSLY GRANTED TO THE UNITED STATES GOVERNMENT ELGAR CORPORATION RESERVES ALL PATENT, PROPRIETARY DESIGN, USE, SALE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO

MODIFICATION INSTRUCTIONS: COMPONENT SIDE

A. INSTALL D13 AND D14 AS SHOWN; CUT D13 CATHODE LEAD; CONNECT D13 ANODE TO RIGHT PAD; JUMPER D14 ANODE TO LEFT PAD; JUMPER D14 CATHODE TO MIDDLE PAD, USING 22GA WIRE (ITEM 264) AS SHOWN.

B. INSTALL Q3 AS SHOWN; JUMPER Q3-G TO SILKSCREENED Q3-G JUMPER Q3-S TO SILKSCREENED Q3-S, USING ITEM 264 (22GA WIRE).

C. ADD R108 FROM Q3-D TO SILKSCREENED Q3-D, AS SHOWN.

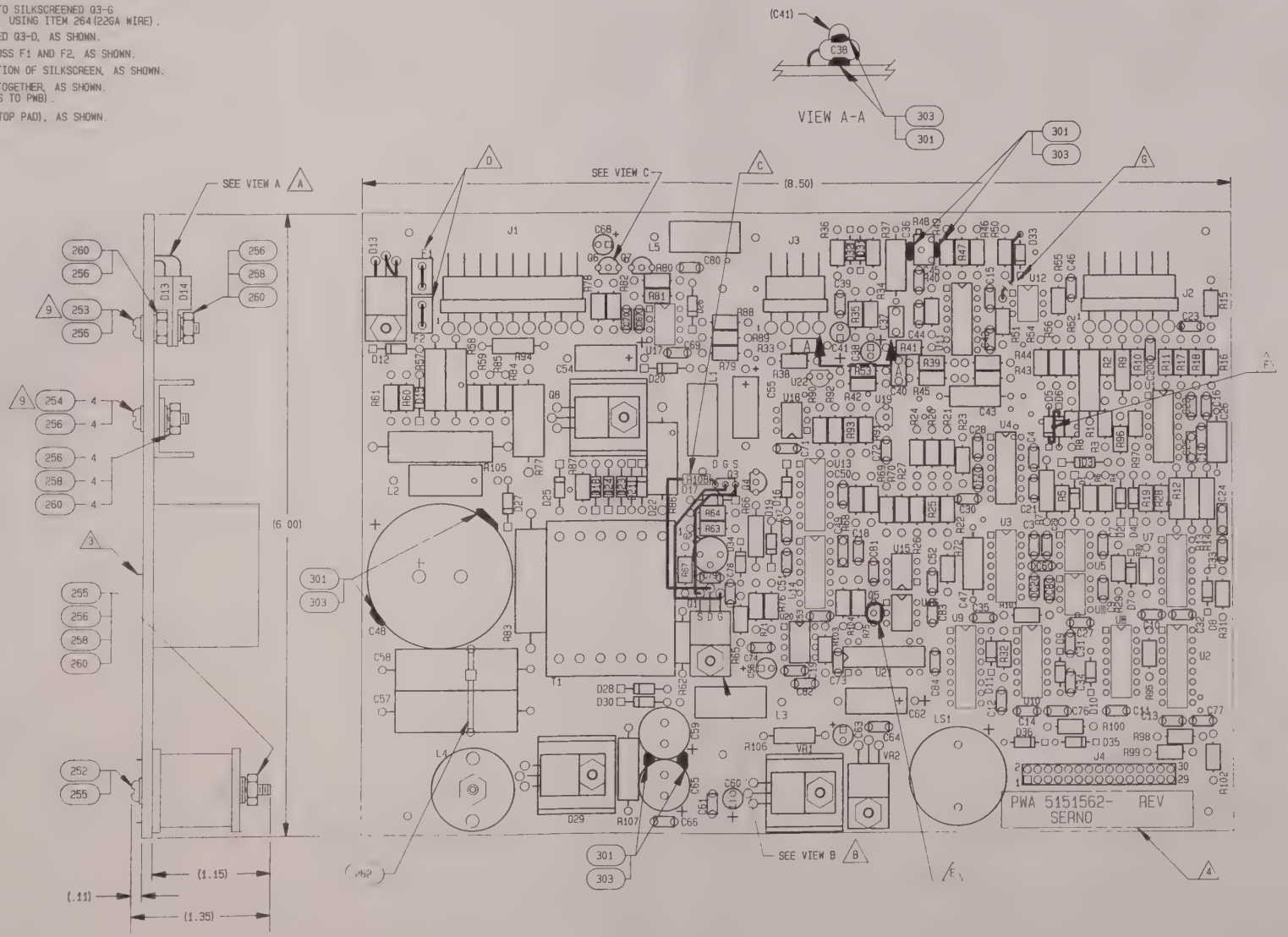
D. INSTALL (22GA WIRE) ITEM 264 ACROSS F1 AND F2, AS SHOWN.

E. INSTALL Q5 WITH OPPOSITE ORIENTATION OF SILKSCREEN, AS SHOWN.

F. D5 AND D6 CATHODES ARE SOLDERED TOGETHER, AS SHOWN. (DO NOT SOLDER D5 AND D6 CATHODES TO PWB).

G. CUT TRACE FROM D33 ANODE TO R51 (TOP PAD), AS SHOWN.

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965		
SCALE		SHEET	

5151562

MODIFICATION INSTRUCTIONS: SOLDER SIDE

A. CUT TRACE FROM D33 CATHODE TO U11-14, AS SHOWN.

B. CUT TRACE FROM U12-2 TO R51(TOP PAD), AS SHOWN.

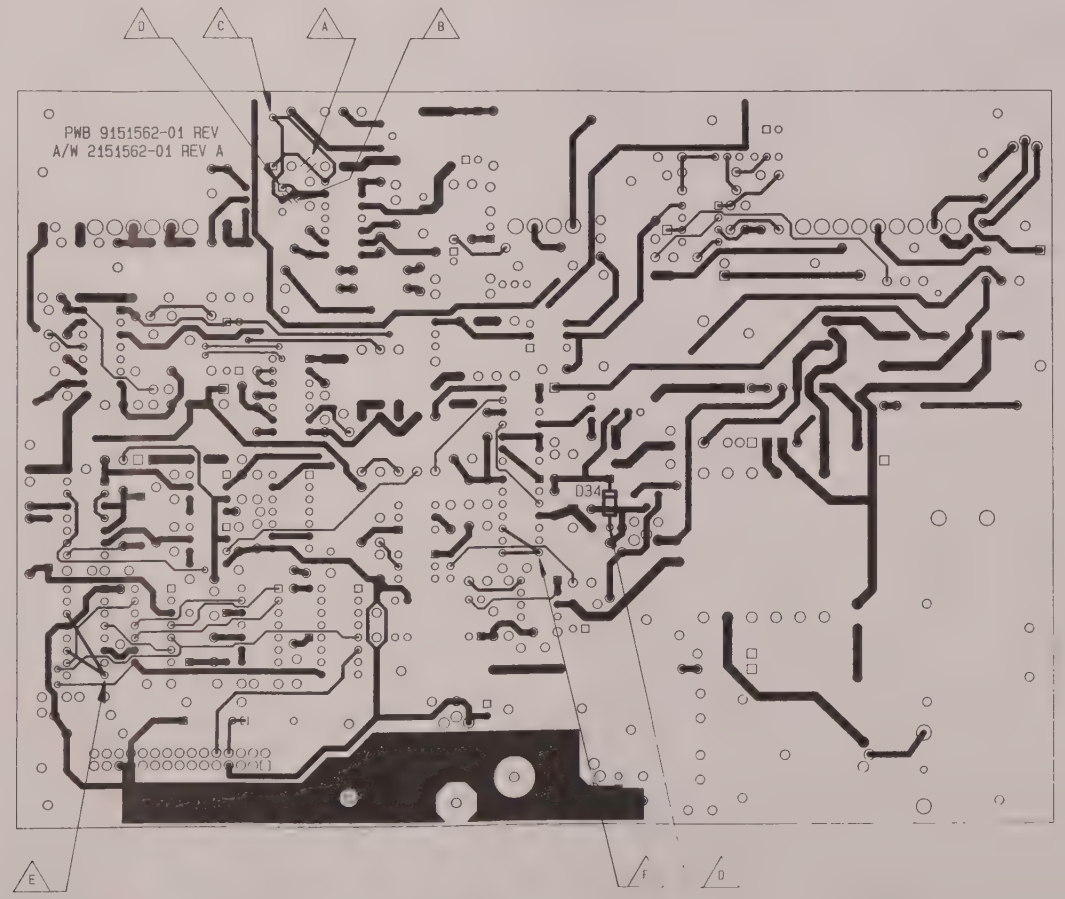
C. ADD JUMPERS FROM D33 ANODE TO U11-14; FROM D33 ANODE TO U12-2 AS SHOWN. (CAUTION: KEEP JUMPERS RIGHT OF D33 LOCATION)

C. ADD JUMPER FROM U12-1 TO R51(TOP PAD), AS SHOWN.

D. ADD D34 USING (JUMPER) ITEM 264 ORIENTATE AS SHOWN.

E. ADD JUMPERS FROM U2-8 TO U2-11 AND FROM U2-8 TO U2-14.

F. ADD JUMPERS FROM U14-7 TO U14-8 AND FROM U14-7 TO U14-10.



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

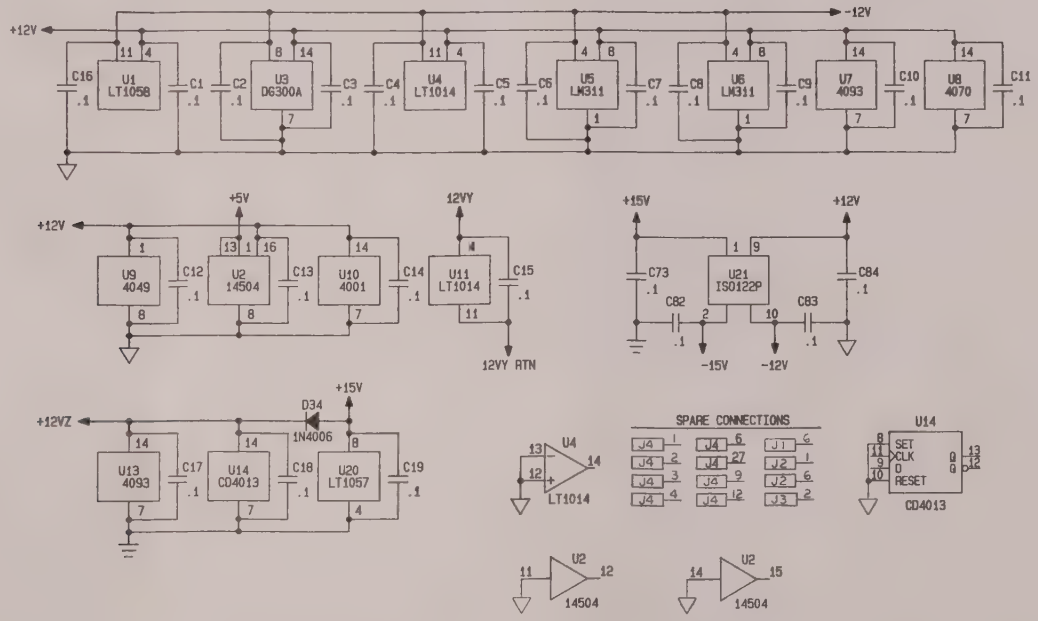
SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151562	C

SCALE 2/1 SHEET 3 OF 3

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IAW DOD-STD-100.
2. ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 2%. IF RESISTOR TOLERANCE IS NOTED AS 1% THEN POWER RATING IS 1/10W.
3. ALL CAPACITOR VALUES ARE IN MICROFARADS, 50V.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE PER DRN R0400	10/6/92	



REFERENCE DESIGNATORS	
HIGHEST	NOT USED
C84	C75
D36	
F2	
J4	
K2	
L5	
LS1	
Q8	
R108	R73, R74
T1	
U21	
VR2	

5151562	6UPS2400
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING

MATERIAL

FINISH

THE INFORMATION DISCLOSED HEREIN WAS ORIGINATED BY AND IS THE PROPERTY OF ELGAR CORPORATION AND EXCEPT FOR RIGHTS EXPRESSLY GRANTED TO THE UNITED STATES GOVERNMENT, ELGAR CORPORATION RESERVES ALL PATENT, PROPRIETARY, DESIGN, USE, SALE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO

CONTRACT NO
FIRST MADE FOR

APPROVAL		DATE
DRAWN	JM	10/6/92
CHECKED	Pat	10/7/92
PROJ ENG		10/14/92
QA REL		

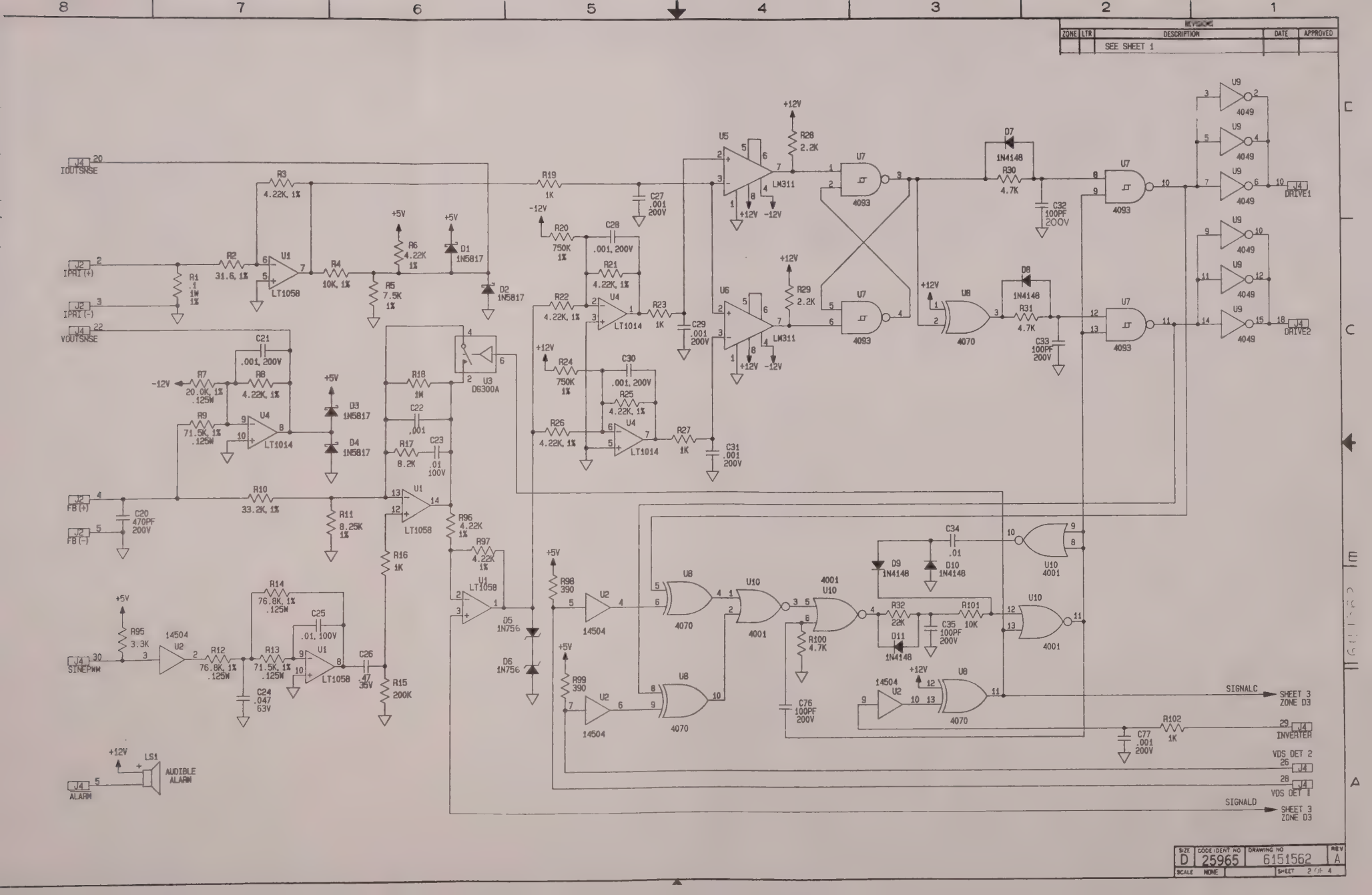
ELGAR

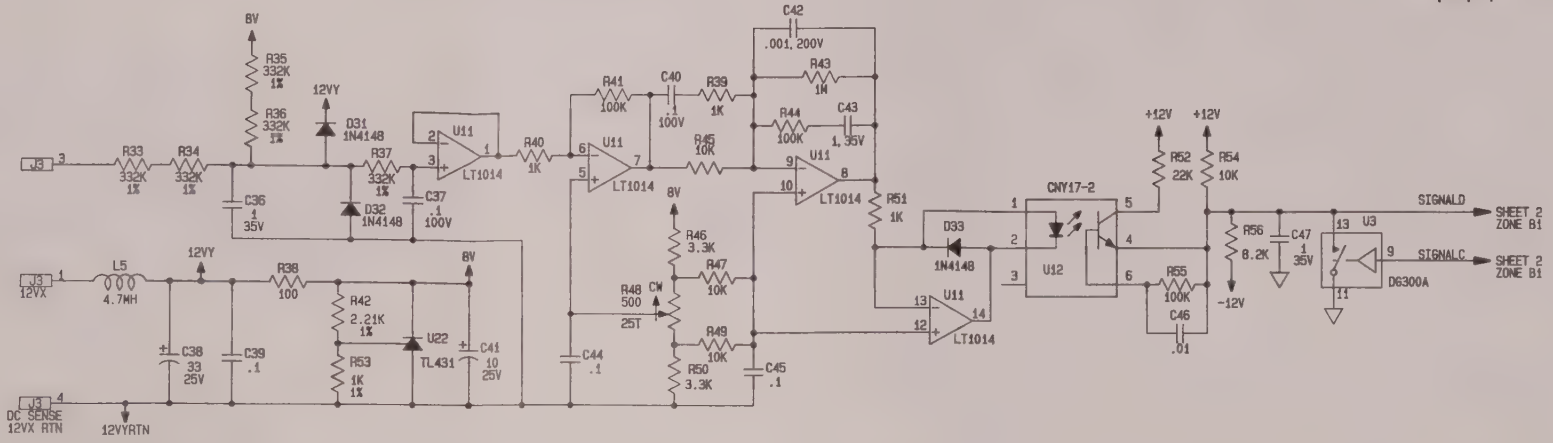
CONTROL
SCHEMATIC DIAGRAM

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	6151562	A

SCALE NONE SHEET 1 OF 4

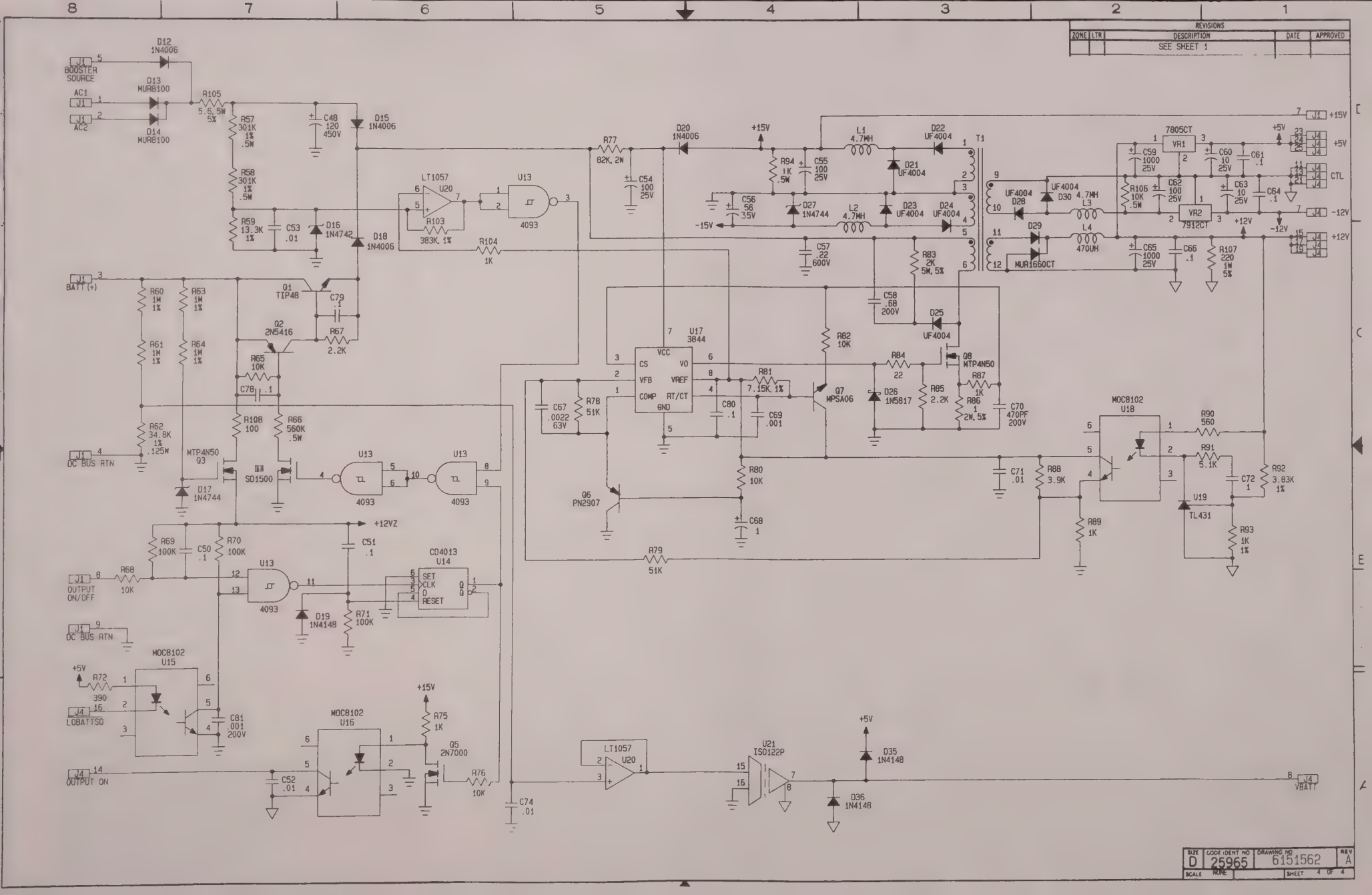
6151562


8
7
6
5
4
3
2
1
REVISIONS
ZONE LTR DESCRIPTION DATE APPROVED
SEE SHEET 1
IOUTSNSE
IPRI (+)
IPRI (-)
VOUTSNSE
FB (+)
FB (-)
SYNCPWM
ALARM
AUDIBLE ALARM
LT1058
LT1014
LM311
4093
4070
4001
4049
14504
D6300A
1N5817
1N4148
1N756
DRIVE1
DRIVE2
INVERTER
VDS DET 2
VDS DET 1
SIGNALC
SIGNALD
SHEET 3 ZONE D3
SIZE D
CODE IDENT NO 25965
DRAWING NO 6151562
REV A
SCALE NONE
SHEET 2 OF 4



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

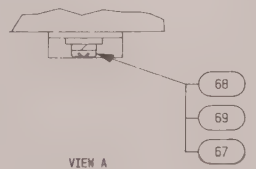
SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	6151562	A
SCALE	NONE	SHEET	3 OF 4


REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVED
SEE SHEET 1
BOOSTER SOURCE
AC1
AC2
BATT (+)
DC BUS RTN
OUTPUT ON/OFF
LOBATTSD
OUTPUT ON
VBATT
+15V
+5V
CTL
-12V
+12V
+12VZ
7805CT
7912CT
TIP48
2N5416
MTP4N50
SD1500
PN2907
MPSA06
2N7000
3844
4093
CD4013
MOC8102
ISO122P
TL431
LT1057
MUR8100
MUR1660CT
1N4006
1N4744
1N4148
1N5817
UF4004
4.7MH
470UH

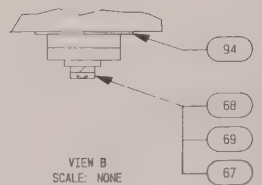
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE PER DAN R0352	[illegible]	[illegible]

NOTES:

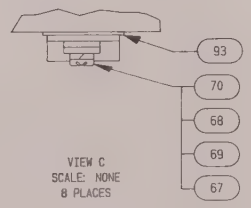
1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.
2. THIS DRAWING USED IN CONJUNCTION WITH SCHEMATIC DIAGRAM 6151560.
3. LEAD TIP PROTRUSION .06 SOLDER SIDE.
4. PERMANENTLY IDENTIFY PART NUMBER, REVISION LETTER AND SERIAL NUMBER IN .12 HIGH CHARACTERS USING RUBBER STAMP, STENCIL OR HAND LETTER. LOCATE APPROXIMATELY AS SHOWN.
5. CONFORMAL COAT TESTED PWA USING ITEM 300. MASK MATING AND ENGAGING SURFACES OF CONNECTORS, TERMINALS, MOUNTING HARDWARE AND AREAS INDICATED.
6. ABBREVIATIONS IN ACCORDANCE WITH MIL-STD-12.
7. MOUNTING HARDWARE INSTALLED THIS LOCATION AT NEXT ASSEMBLY.
8. ELECTROSTATIC DISCHARGE CONTROL PROGRAM FOR PROTECTION OF ELECTRICAL AND ELECTRONIC PARTS, ASSEMBLIES AND EQUIPMENT PER IP 0460007-01.
9. WORKMANSHIP IAW ELGAR DOCUMENT 0050004.
10. MOUNT ITEM 11 (R10, 20, 30, 39) FLUSH WITH PRINTED WIRING BOARD.
11. TORQUE SCREWS 4.5 ±.5 IN-LBS.



VIEW A
SCALE: NONE



VIEW B
SCALE: NONE
24 PLACES



VIEW C
SCALE: NONE
8 PLACES

CAUTION
SENSITIVE ELECTRONIC DEVICES

SEE SEPARATE PARTS LIST

5151537	GUPS2400
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± 03 ± 1/32 ± 1/2°
XXX ± 010
DO NOT SCALE THIS DRAWING

MATERIAL

FINISH 5

CONTRACT NO
FIRST MADE FOR

APPROVAL		DATE
DRAWN	[illegible]	7-7-92
CHECKED	[illegible]	7/7/92
PROJ ENG	[illegible]	7/9/92
QA REL	[illegible]	7/29/92

ELGAR

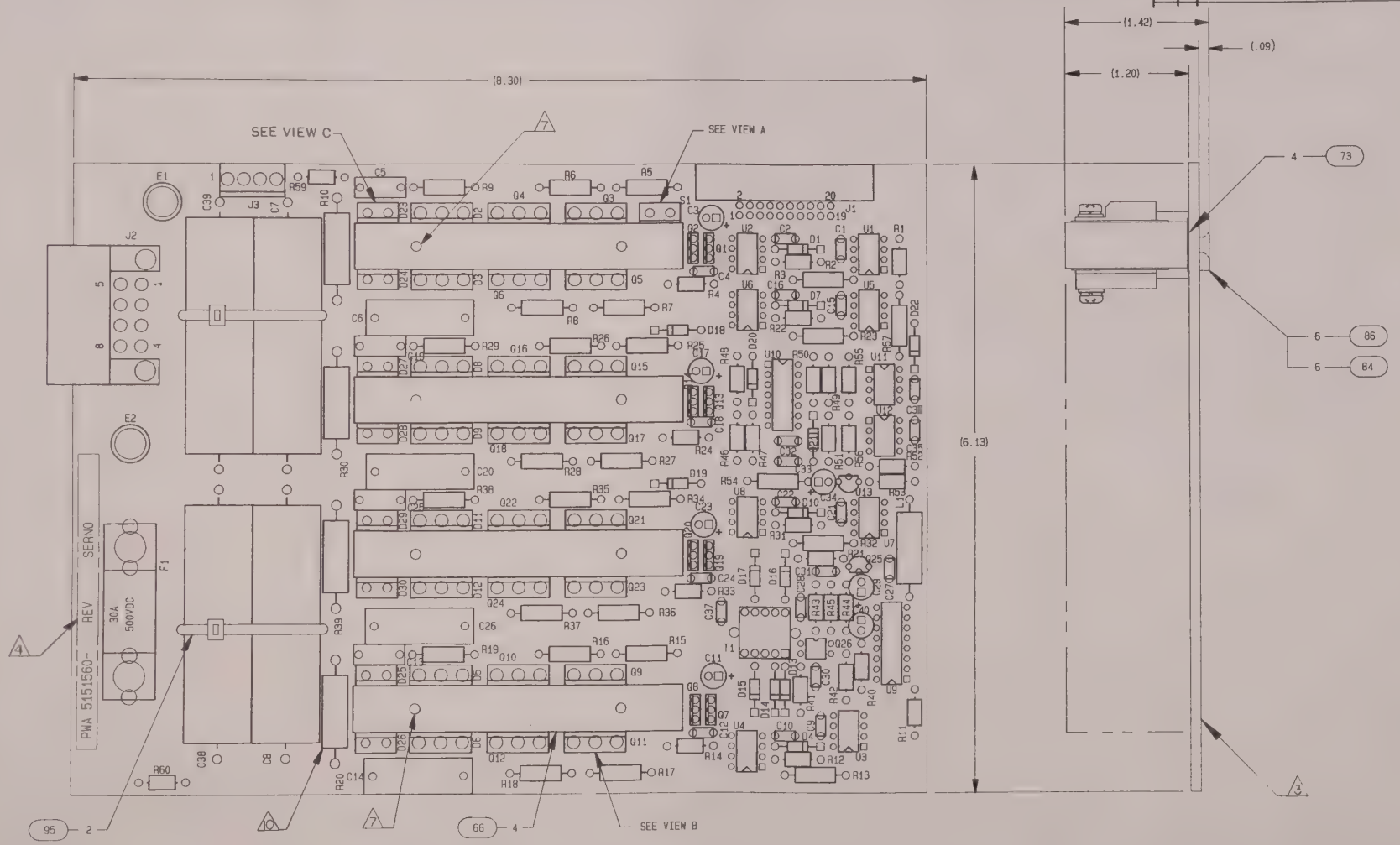
PRINTED WIRING ASSEMBLY, INVERTER POWER

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151560	A

SCALE NONE SHEET 1 OF 2

THE INFORMATION DISCLOSED HEREIN WAS ORIGINATED BY AND IS THE PROPERTY OF ELGAR CORPORATION AND EXCEPT FOR RIGHTS EXPRESSLY GRANTED TO THE UNITED STATES GOVERNMENT ELGAR CORPORATION RESERVES ALL PATENT PROPRIETARY DESIGN USE SALE MANUFACTURING AND REPRODUCTION RIGHTS THEREIN

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



-01 ASSY

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151560	A
SCALE 2/1		SHEET 2 OF 2	

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IAW DOD-STD-100.
2. ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 2%.
   IF RESISTOR TOLERANCE IS NOTED AS 1%.
   THEN POWER RATING IS 1/10W.
3. ALL CAPACITOR VALUES ARE IN MICROFARADS, 50V.

4. R58 IS SHOWN FOR REFERENCE ONLY.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE PER DAN A0352	5/19/92	

SPARE CONNECTIONS

J1	1
J1	3
J1	4
J1	5
J1	6
J1	7
J1	8
J1	9
J1	11
J1	13
J3	2

REFERENCE DESIGNATIONS	
HIGHEST	NOT USED
Q40	
D30	
F1	
J3	
L1	
Q26	
R66	
S1	
T1	
U11	

NEXT ASSY	GUPS2400
APPLICATION	USED ON

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING

MATERIAL

FINISH

THE INFORMATION DISCLOSED HEREIN WAS ORIGINATED BY AND IS THE PROPERTY OF ELGAR CORPORATION AND EXCEPT FOR RIGHTS EXPRESSLY GRANTED TO THE UNITED STATES GOVERNMENT ELGAR CORPORATION RESERVES ALL PATENT, PROPRIETARY, DESIGN, USE, SALE, MANUFACTURING AND REPRODUCTION RIGHTS THEREIN.

CONTRACT NO	
FIRST MADE FOR	

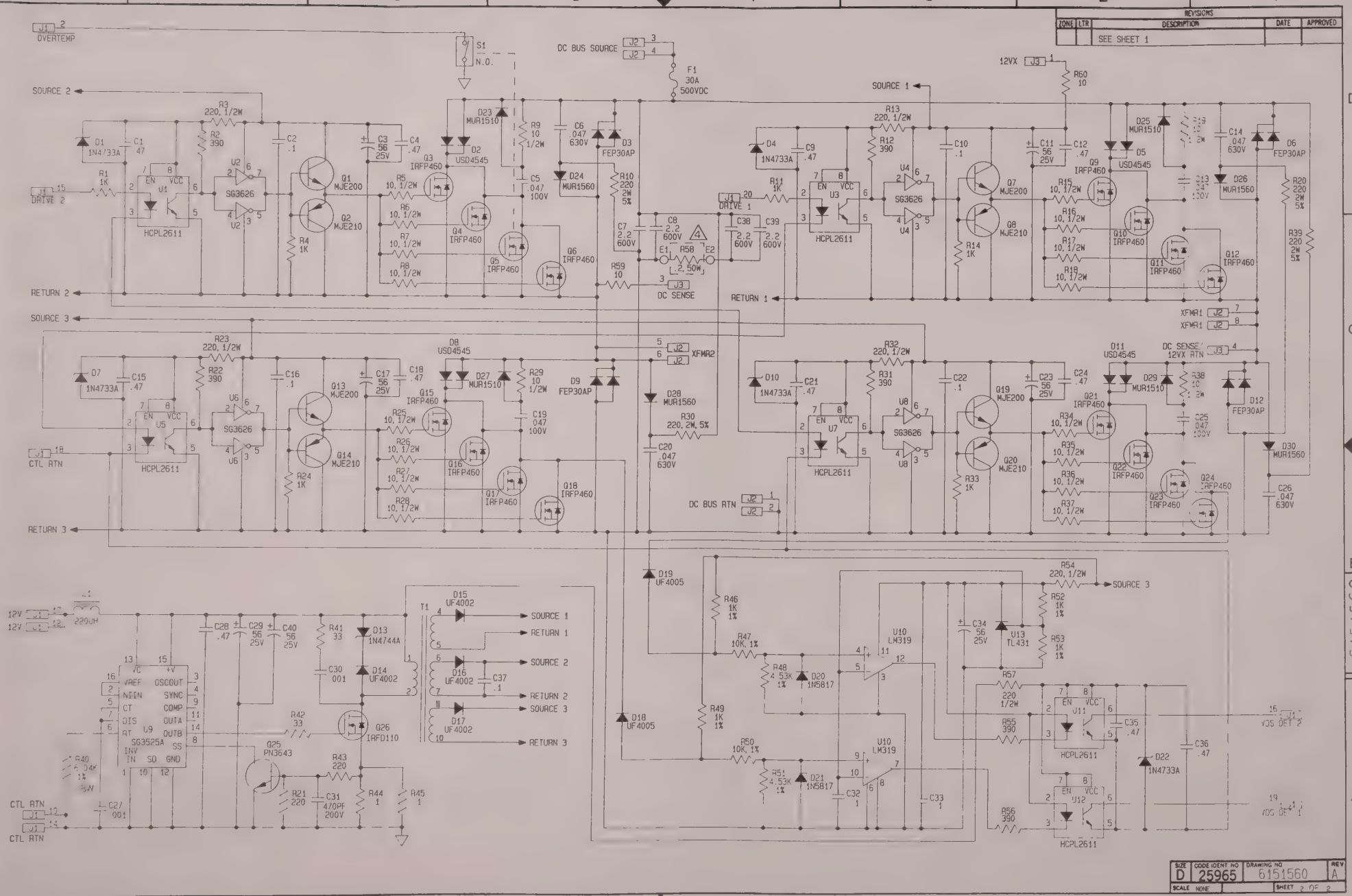
APPROVAL		DATE
DRAWN	JW	1/7/92
CHECKED	[illegible]	5/19/92
PROJ ENG	[illegible]	2/7/92
QA REL	[illegible]	5/20/92

ELGAR

SCHEMATIC

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	[illegible]	A

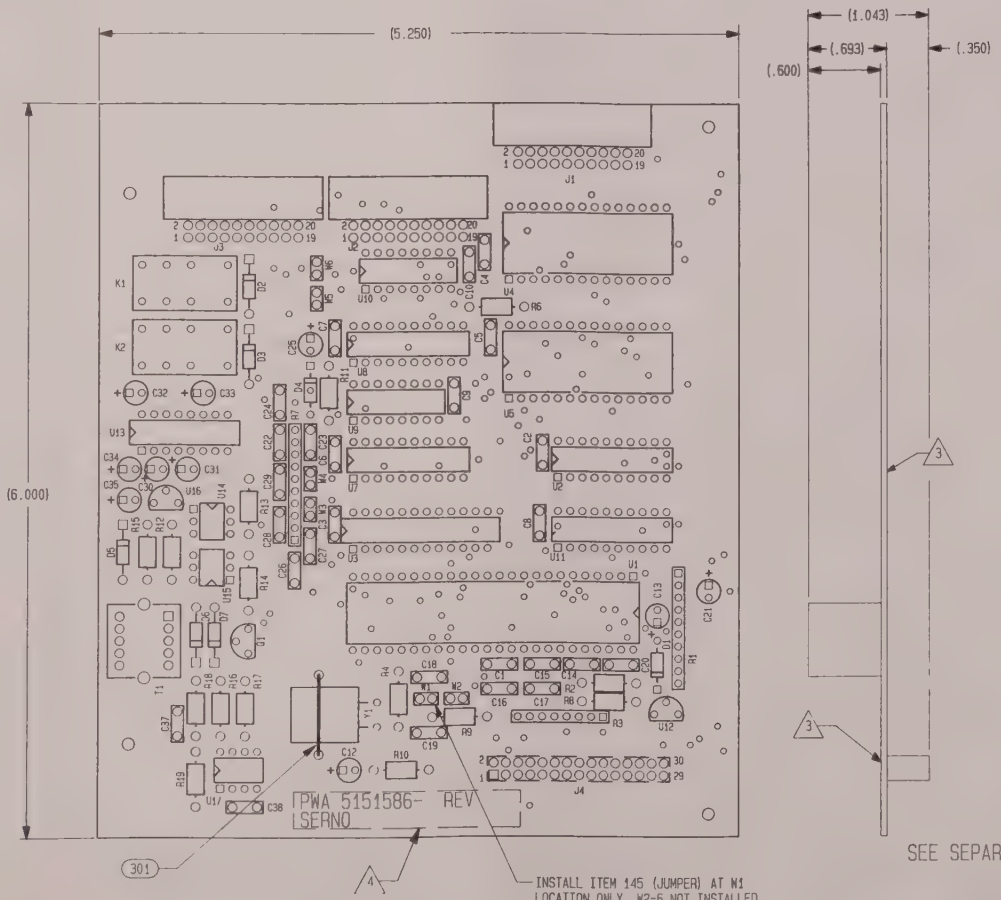
SCALE NONE SHEET


REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVED
SEE SHEET 1
OVERTEMP
S1
N.O.
DC BUS SOURCE
F1
30A
500VDC
SOURCE 2
SOURCE 1
12VX
R60
10
R3
220, 1/2W
R2
390
D1
1N4733A
C1
47
R1
1K
U1
HCPL2611
U2
SG3626
C2
.1
C3
56
25V
C4
.47
Q1
MJE200
Q2
MJE210
R4
1K
D23
MUR1510
D2
USD4545
Q3
IRFP460
R5
10, 1/2W
R6
10, 1/2W
R7
10, 1/2W
R8
10, 1/2W
Q4
IRFP460
Q5
IRFP460
Q6
IRFP460
R9
10
1/2W
C5
.047
100V
C6
.047
630V
D3
FEP30AP
D24
MUR1560
R10
220
2W
5%
C7
2.2
600V
C8
2.2
600V
C38
2.2
600V
C39
2.2
600V
R58
.2, 50W
R59
10
DC SENSE
DRIVE 2
DRIVE 1
RETURN 2
RETURN 1
SOURCE 3
R23
220, 1/2W
R22
390
D7
1N4733A
C15
.47
U5
HCPL2611
U6
SG3626
C16
.1
C17
56
25V
C18
.47
Q13
MJE200
Q14
MJE210
R24
1K
D8
USD4545
D27
MUR1510
Q15
IRFP460
Q16
IRFP460
Q17
IRFP460
Q18
IRFP460
R29
10
1/2W
C19
.047
100V
D9
FEP30AP
D28
MUR1560
R30
220, 2W, 5%
C20
.047
630V
XFMR2
CTL RTN
RETURN 3
DC BUS RTN
D4
1N4733A
C9
.47
R13
220, 1/2W
R12
390
R11
1K
U3
HCPL2611
U4
SG3626
C10
.1
C11
56
25V
C12
.47
Q7
MJE200
Q8
MJE210
R14
1K
D25
MUR1510
D5
USD4545
Q9
IRFP460
Q10
IRFP460
Q11
IRFP460
Q12
IRFP460
R15
10, 1/2W
R16
10, 1/2W
R17
10, 1/2W
R18
10, 1/2W
R19
10
1/2W
C13
.047
100V
C14
.047
630V
D6
FEP30AP
D26
MUR1560
R20
220
2W
5%
R39
220
2W
5%
XFMR1
DC SENSE
12VX RTN
D10
1N4733A
C21
.47
R32
220, 1/2W
R31
390
U7
HCPL2611
U8
SG3626
C22
.1
C23
56
25V
C24
.47
Q19
MJE200
Q20
MJE210
R33
1K
D11
USD4545
D29
MUR1510
Q21
IRFP460
Q22
IRFP460
Q23
IRFP460
Q24
IRFP460
R34
10, 1/2W
R35
10, 1/2W
R36
10, 1/2W
R37
10, 1/2W
R38
10
1/2W
C25
.047
100V
D12
FEP30AP
D30
MUR1560
C26
.047
630V
L1
220UH
12V
U9
SG3525A
C28
.47
C29
56
25V
C40
56
25V
R41
33
D13
1N4744A
C30
.001
D14
UF4002
R42
33
Q26
IRFD110
R43
220
Q25
PN3643
R21
220
C31
470PF
200V
R44
1
R45
1
R40
1%
1/4W
C27
.001
T1
D15
UF4002
D16
UF4002
C37
.1
D17
UF4002
SOURCE 1
RETURN 1
SOURCE 2
RETURN 2
SOURCE 3
RETURN 3
D19
UF4005
D18
UF4005
R46
1K
1%
R47
10K, 1%
R48
4.53K
1%
D20
1N5817
R49
1K
1%
R50
10K, 1%
R51
4.53K
1%
D21
1N5817
U10
LM319
C32
1
C33
1
R54
220, 1/2W
R52
1K
1%
R53
1K
1%
U13
TL431
C34
56
25V
R57
220
1/2W
R55
390
R56
390
U11
HCPL2611
U12
HCPL2611
C35
.47
C36
.47
D22
1N4733A
VDS DET 2
VDS DET 1
SIZE D
CODE IDENT NO 25965
DRAWING NO 6151560
REV A
SCALE NONE
SHEET 2 OF 2

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE IAW DRN R0436	7-1-92	[illegible]

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.
2. THIS DRAWING USED IN CONJUNCTION WITH SCHEMATIC DIAGRAM 6151586.
3. LEAD TIP PROTRUSION .06 (BOTH SIDES).
4. PERMANENTLY IDENTIFY PART NUMBER, REVISION LETTER AND SERIAL NUMBER IN .12 HIGH CHARACTERS USING RUBBER STAMP, STENCIL OR HAND LETTER. LOCATE APPROXIMATELY WHERE SHOWN.
5. CONFORMAL COAT TESTED PWA USING ITEM 300. MASK MATING AND ENGAGING SURFACES OF CONNECTORS, TERMINALS, MOUNTING HARDWARE AND AREAS INDICATED.
6. ELECTROSTATIC DISCHARGE CONTROL PROGRAM FOR PROTECTION OF ELECTRICAL AND ELECTRONIC PARTS, ASSEMBLIES AND EQUIPMENT PER IP 0460007-01.
7. WORKMANSHIP IAW ELGAR DOCUMENT 0050004.



SEE SEPARATE PARTS LIST

CAUTION
SENSITIVE ELECTRONIC DEVICES

5151537	GUPS2400
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS: XX ± .03, XXX ± .010
FRACTIONS: ± 1/32
ANGLES: ± 1/2°
DO NOT SCALE THIS DRAWING

MATERIAL

FINISH 5

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CONTRACT NO		
FIRST MADE FOR		
APPROVAL		DATE
DRAWN	[signature]	7-7-92
CHECKED	Dick	7/7/92
PROJ ENG	[signature]	7/7/92
QA REL	[signature]	7-7-92

ELGAR

PRINTED WIRING ASSEMBLY, PROCESSOR

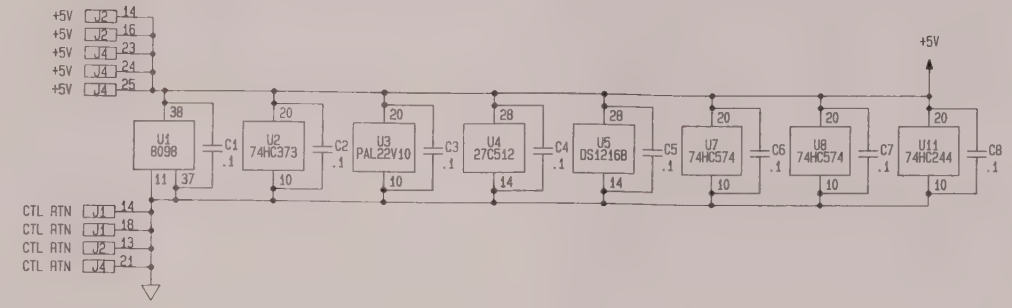
SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151586	A

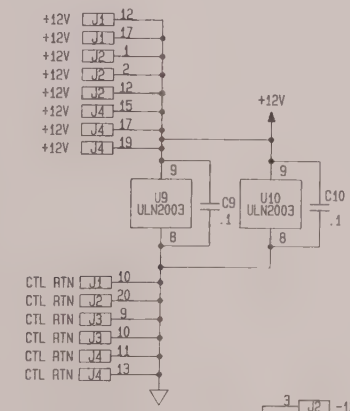
SCALE 2/1 SHEET 1 OF 1

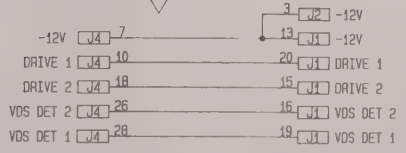
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE IAW DRN A0346	7/7/92	[illegible]

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IAW DOD-STD-100.
2. ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 2%. IF RESISTOR TOLERANCE IS NOTED AS 1%, THEN POWER RATING IS 1/10W.
3. ALL CAPACITOR VALUES ARE IN MICROFARADS, 50V.

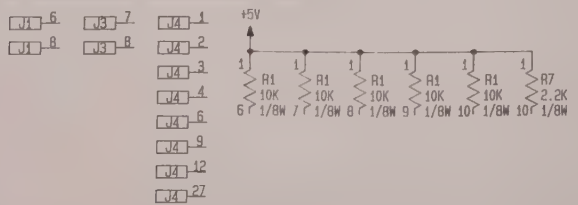






REFERENCE DESIGNATORS	
HIGHEST	NOT USED
C38	C11
D7	
J4	
R19	R5
U17	U6
W4	
Y1	
Q1	

SPARES



5151586	6UPS2400		
NEXT ASSY	USED ON		
APPLICATION			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING

MATERIAL

FINISH

CONTRACT NO
FIRST MADE FOR

APPROVAL		DATE
DRAWN	[illegible]	7-6-92
CHECKED	[illegible]	7/7/92
PROJ ENG	[illegible]	[illegible]
QA REL	[illegible]	7/7/92

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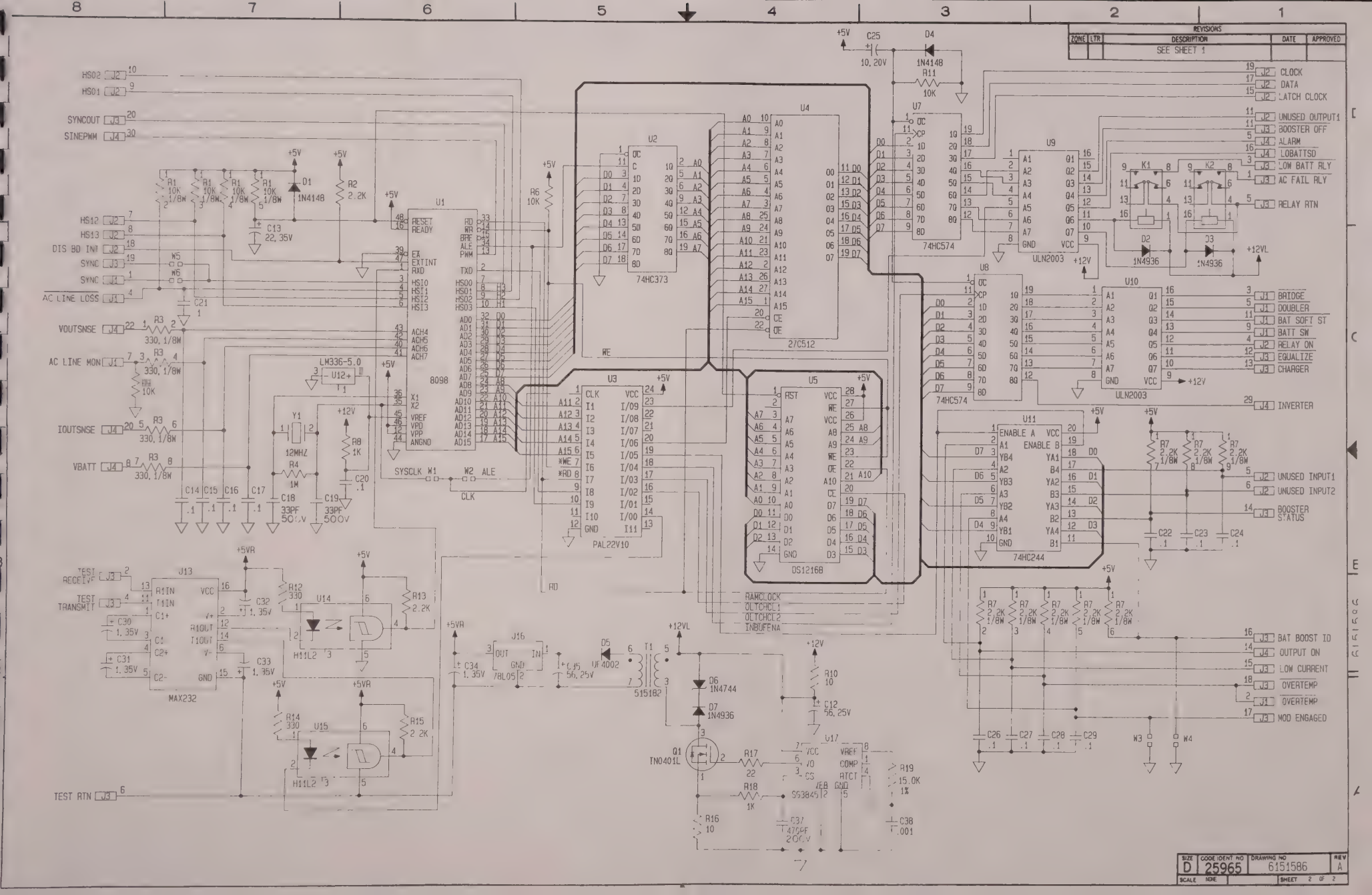
ELGAR

PROCESSOR, SCHEMATIC DIAGRAM

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	6151586	-

SCALE NONE SHEET 1 OF 2

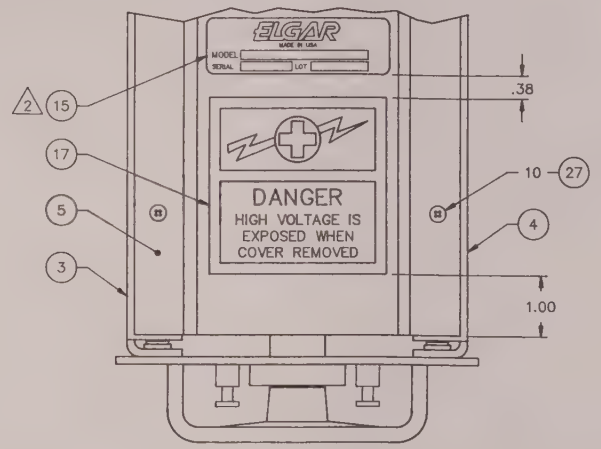
6151586

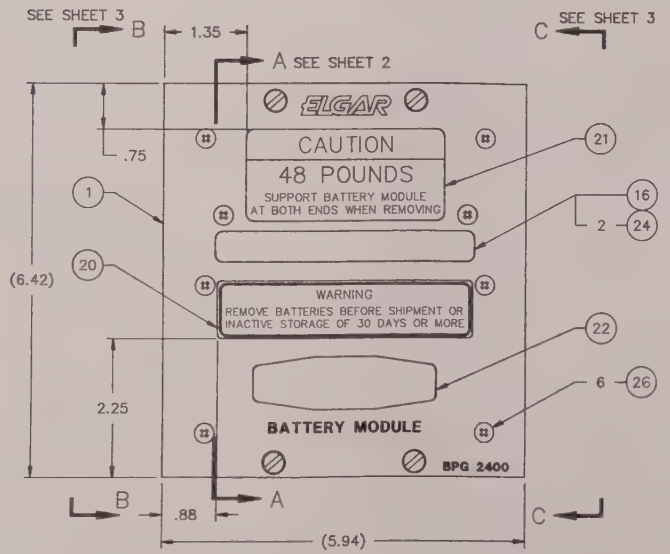

REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVED
SEE SHEET 1
HS02 J2 10
HS01 J2 9
SYNCOUT J3 20
SINEPWM J4 30
HS12 J2 7
HS13 J2 8
DIS BD INT J2 18
SYNC J3 19
SYNC J4 1
AC LINE LOSS J4 4
VOUTSNSE J4 22
AC LINE MON J4 7
IOUTSNSE J4 20
VBATT J4 8
TEST RECEIVE J3 2
TEST TRANSMIT J3 4
TEST RTN J3 6
+5V
+5VR
+12V
+12VL
D1 1N4148
D2 1N4936
D3 1N4936
D4 1N4148
D5 UF4002
D6 1N4744
D7 1N4936
Q1 IN0401L
R1 10K 1/8W
R2 2.2K
R3 330, 1/8W
R4 1M
R6 10K
R8 1K
R10 10
R11 10K
R12 330
R13 2.2K
R14 330
R15 2.2K
R16 10
R17 22
R18 1K
R19 15.0K 1%
R7 2.2K 1/8W
C13 22, 35V
C20 .1
C21 1
C22 .1
C23 .1
C24 .1
C25 10, 20V
C26 .1
C27 .1
C28 .1
C29 .1
C30 1.35V
C31 1.35V
C32 1.35V
C33 1.35V
C34 1.35V
C35 56, 25V
C36 .001
C37 470PF 200V
C12 56, 25V
C14 .1
C15 .1
C16 .1
C17 .1
C18 33PF 500V
C19 33PF 500V
Y1 12MHZ
W1
W2
W3
W4
W5
W6
U1 8098
U2 74HC373
U3 PAL22V10
U4 27C512
U5 DS1216B
U7 74HC574
U8 74HC574
U9 ULN2003
U10 ULN2003
U11 74HC244
U12 LM336-5.0
U13 MAX232
U14 H11L2
U15 H11L2
U16 78L05
U17 SG3845
T1 515182
J1 BRIDGE
J1 DOUBLER
J1 BAT SOFT ST
J1 BATT SW
J1 OVERTEMP
J2 RELAY ON
J2 EQUALIZE
J2 CHARGER
J2 UNUSED INPUT1
J2 UNUSED INPUT2
J3 BOOSTER STATUS
J3 BAT BOOST ID
J4 OUTPUT ON
J3 LOW CURRENT
J3 OVERTEMP
J3 MOD ENGAGED
J4 INVERTER
J2 CLOCK
J2 DATA
J2 LATCH CLOCK
J2 UNUSED OUTPUT1
J3 BOOSTER OFF
J4 ALARM
J4 LOBATTSD
J3 LOW BATT RLY
J3 AC FAIL RLY
J3 RELAY RTN
RAMCLOCK
OLTCHCL1
OLTCHCL2
INBUFENA
RD
WE
CLK
SYSCLK
ALE
SIZE D
CODE IDENT NO 25965
DRAWING NO 6151586
REV A
SCALE NONE
SHEET 2 OF 2

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	INITIAL REL PER DRN A0332	6-2-92	
	B	INCORP PER ECN 8373	9-2-92	

NOTES: UNLESS OTHERWISE SPECIFIED

1. APPLY ITEM 18 (ADHESIVE) TO ALL SCREWS AT FINAL ASSEMBLY.
2. IDENTIFY WITH ELGAR PN, LATEST REV LETTER, SERIAL NO., AND LOT NO. USING ITEM 15 (LABEL).
3. SECURE WIRE BUNDLES WITH CABLE TIES (ITEM 35) AT 3 INCH INTERVALS.
4. SECURE WIRE BUNDLE TO BATTERY PACK USING ITEM 38 (MYLAR TAPE) IN 4 PLACES.





551502B1

-01 ASSY

5151501-01	GUPS 2400		
NEXT ASSY	USED ON		
APPLICATION			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING
MATERIAL
FINISH

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CONTRACT NO		
FIRST MADE FOR		
APPROVAL		DATE
DRAWN	LEDFORD	2-19-92
CHECKED	[illegible]	5-11-92
PROJ ENG	[illegible]	6/2/92
QA REL	[illegible]	[illegible]

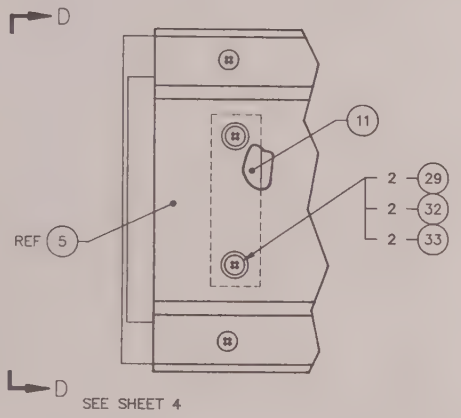
ELGAR

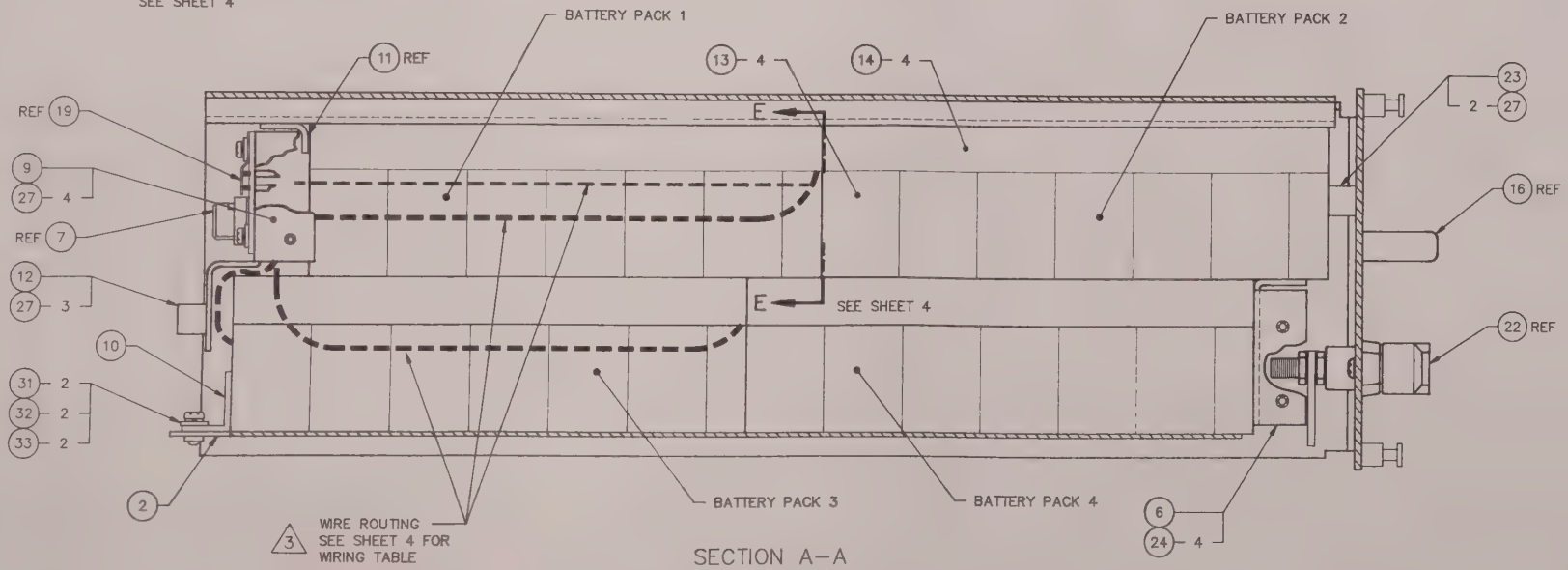
BATTERY MODULE ASSEMBLY

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151502	B

SCALE 1/1 SHEET 1 of 4

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



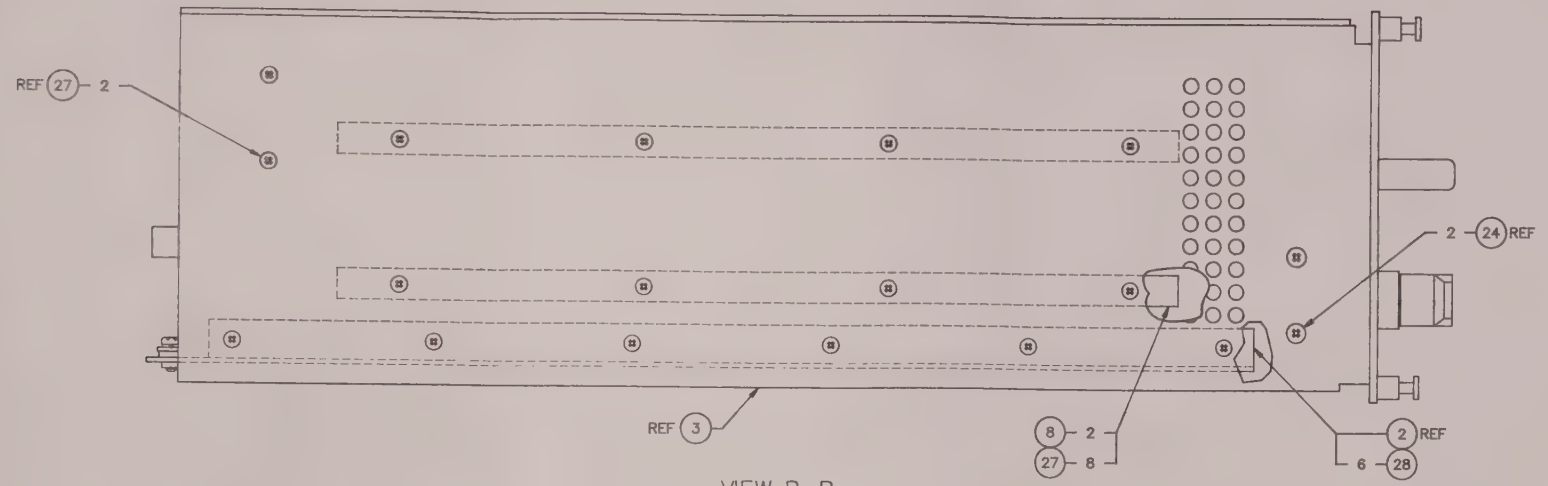


SECTION A–A

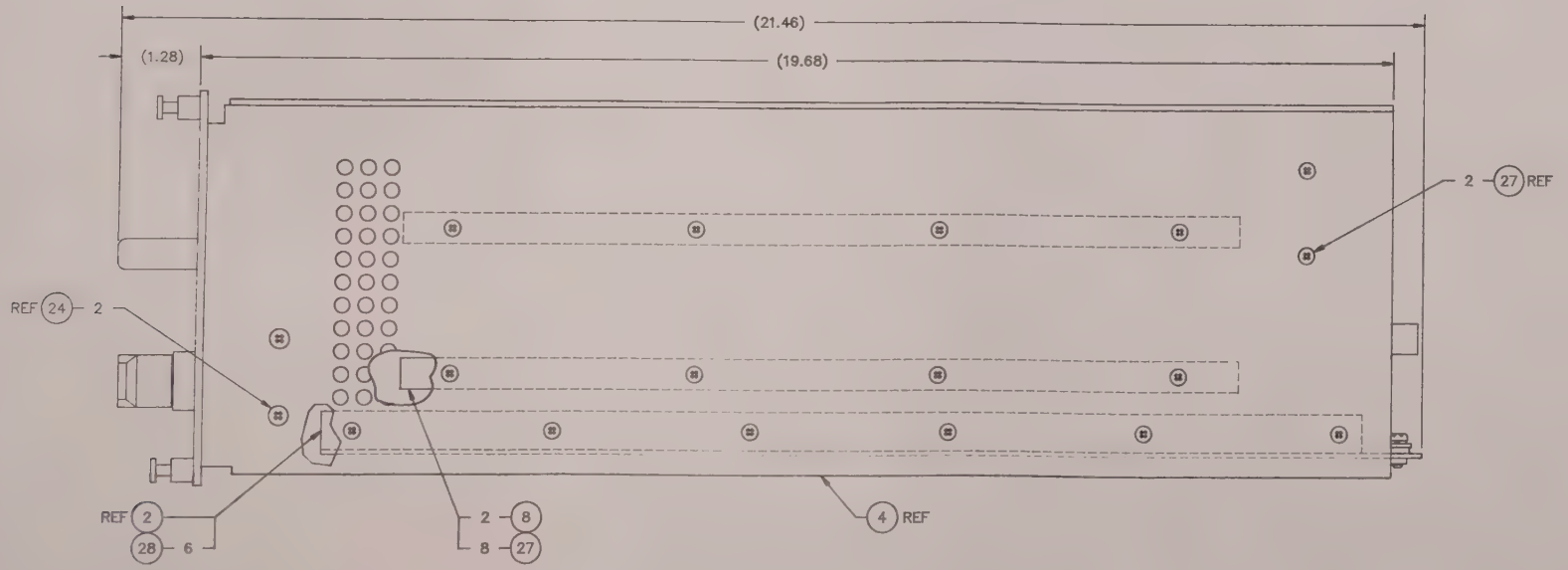
5515028Z

SIZE	CODE IDENT NO	DRAWING NO.	REV
D	25965	5151502	B
SCALE 1/1		SHEET 2 of 4	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



VIEW B–B

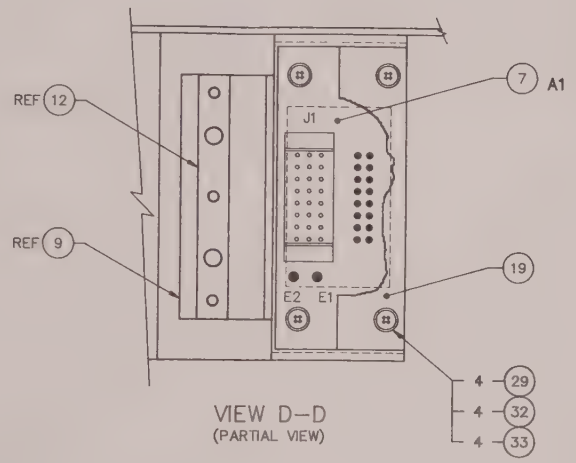


VIEW C–C

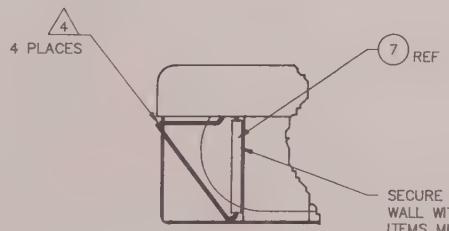
55150283

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151502	B
SCALE 1/1		SHEET 3 of 4	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



VIEW D–D
(PARTIAL VIEW)



SECURE THERMISTOR ASSY OF ITEM 7 (PWA) TO BATTERY WALL WITH 2 LAYERS OF ITEM 38 (MYLAR TAPE). ITEMS MUST STAY WITHIN BATTERY PACK CAVITY.

VIEW E–E
(PARTIAL VIEW)

WIRING TABLE		
ORIGIN	DESTINATION	
A1–W1	A+	BATTERY PACK 1
A1–W2	A–	
A1–W3	B+	
A1–W4	B–	
A1–W5	A+	BATTERY PACK 2
A1–W6	A–	
A1–W7	B+	
A1–W8	B–	
A1–W9	A+	BATTERY PACK 3
A1–W10	A–	
A1–W11	B+	
A1–W12	B–	
A1–W13	A+	BATTERY PACK 4
A1–W14	A–	
A1–W15	B+	
A1–W16	B–	

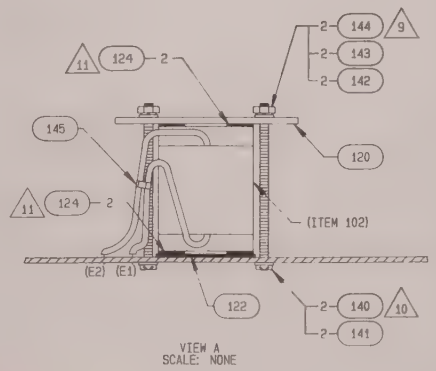
551502B4

SIZE	CODE IDENT NO.	DRAWING NO	REV
D	25965	5151502	B
SCALE NOTED		SHEET 4 of 4	

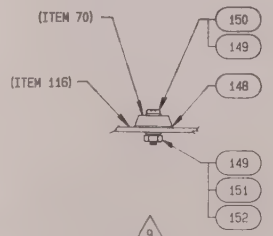
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.
2. THIS DRAWING USED IN CONJUNCTION WITH SCHEMATIC DIAGRAM 6151561.
3. LEAD TIP PROTRUSION .06 SOLDER SIDE.
4. PERMANENTLY IDENTIFY PART NUMBER, REVISION LETTER AND SERIAL NUMBER IN .12 HIGH CHARACTERS USING RUBBER STAMP, STENCIL OR HAND LETTER. LOCATE APPROXIMATELY AS SHOWN.
5. CONFORMAL COAT TESTED PWA USING ITEM 300. MASK MATING AND ENGAGING SURFACES OF CONNECTORS, TERMINALS, MOUNTING HARDWARE AND AREAS INDICATED.
6. ABBREVIATIONS IN ACCORDANCE WITH MIL-STD-12.
7. WORKMANSHIP IAW ELGAR DOCUMENT 0040005.
8. ELECTROSTATIC DISCHARGE CONTROL PROGRAM FOR PROTECTION OF ELECTRICAL AND ELECTRONIC PARTS, ASSEMBLIES AND EQUIPMENT PER IP 0460007-01.
9. TORQUE SCREWS 4.5 +/-.5 IN/LBS.
10. APPLY ITEM 303 (TORQUE SEAL) TO .25 END OF ITEM 140 (SCREW).
11. EDGE OF ITEM 124 (FILLER) TO BE FLUSH WITH EDGE OF CORE ON THE TRANSFORMER AS SHOWN, 4 PLACES.
12. MOUNT ITEMS 18, 20, 21, 23, 25 (R5, 6, 37, 39, 40, 44, 45) FLUSH WITH PRINTED WIRING BOARD.

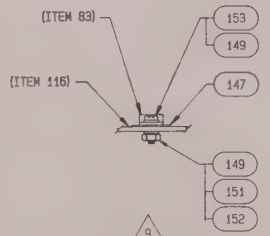
REVISIONS			
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE PER DRN A0353	3/93	



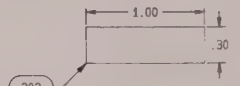
VIEW A
SCALE: NONE



VIEW B
SCALE: NONE
2 PLACES



VIEW C
SCALE: NONE
2 PLACES



VIEW D
SCALE: NONE
(R1 REMOVED)

CAUTION
SENSITIVE ELECTRONIC DEVICES

SEE SEPARATE PARTS LIST

5151500	GUPS2400
NEXT ASSY	USED ON
APPLICATION	

THE INFORMATION DISCLOSED HEREIN WAS ORIGINATED BY AND IS THE PROPERTY OF ELGAR CORPORATION AND EXCEPT FOR RIGHTS EXPRESSLY GRANTED TO THE UNITED STATES GOVERNMENT, ELGAR CORPORATION RESERVES ALL PATENT, PROPRIETARY, DESIGN, USE, SALE, MANUFACTURING AND REPRODUCTION RIGHTS THEREIN.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING
MATERIAL
FINISH 5

CONTRACT NO
FIRST MADE FOR

APPROVAL		DATE
DRAWN	[signature]	7/9/92
CHECKED	[signature]	7/13/92
PROJ ENG	[signature]	7/13/92
QA REL	[signature]	7/14/92

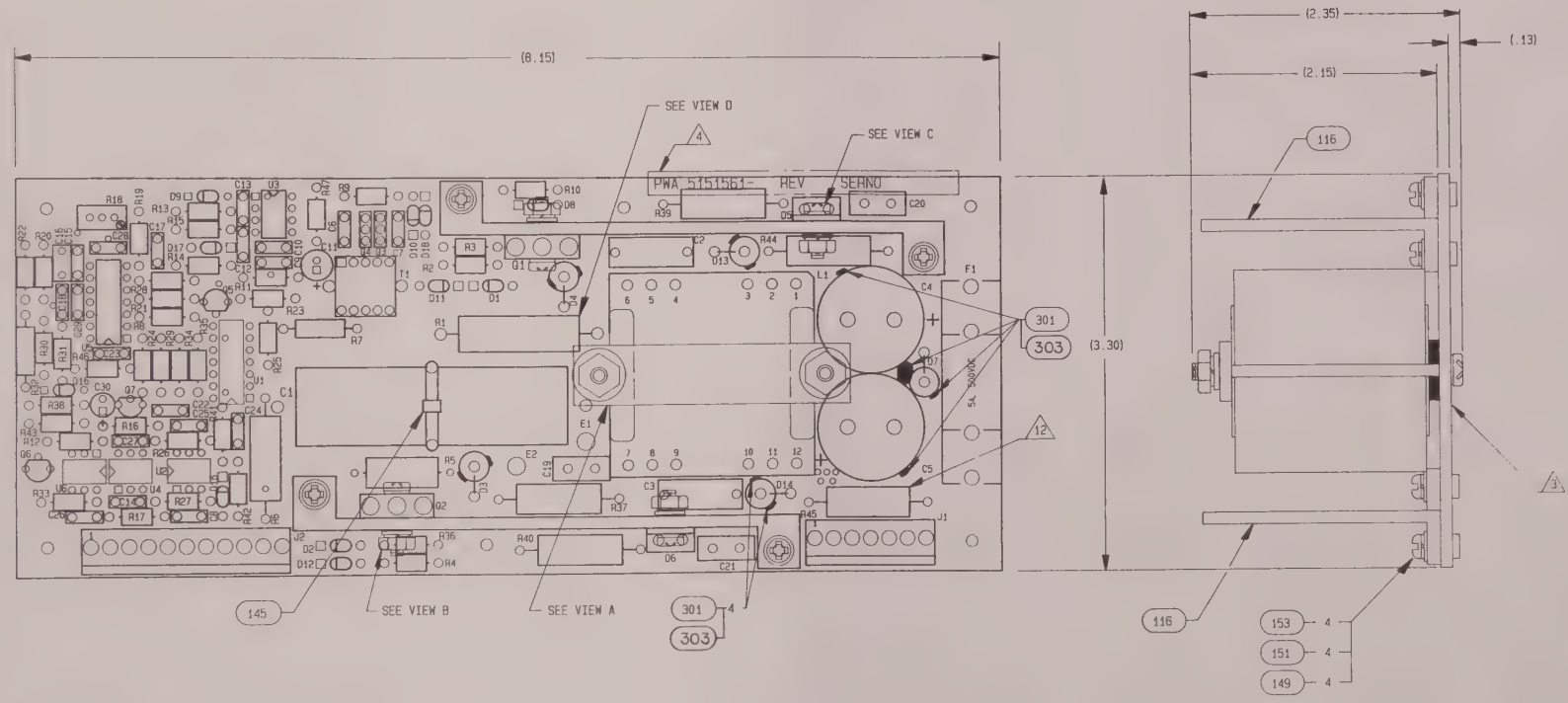
ELGAR

PRINTED WIRING ASSEMBLY, BATTERY CHARGER

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151561	-

SCALE NONE SHEET 1 OF 2

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET1		



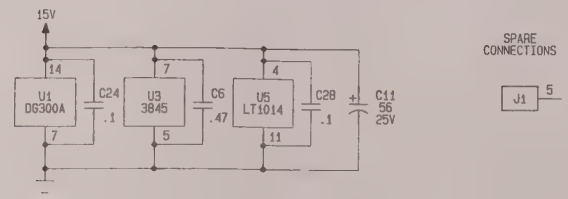
-01 ASSY

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151561	A
SCALE 2/2		SHEET 2 OF 2	

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IAW DOD-STD-100.
2. ALL RESISTOR VALUES ARE IN OHMS 1/4W, 2%. IF RESISTOR TOLERANCE IS NOTED AS 1% THEN POWER RATING IS .1W.
3. ALL CAPACITORS VALUES ARE IN MICROFARADS, 50V.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE PER DRN A0353	7/6/92	



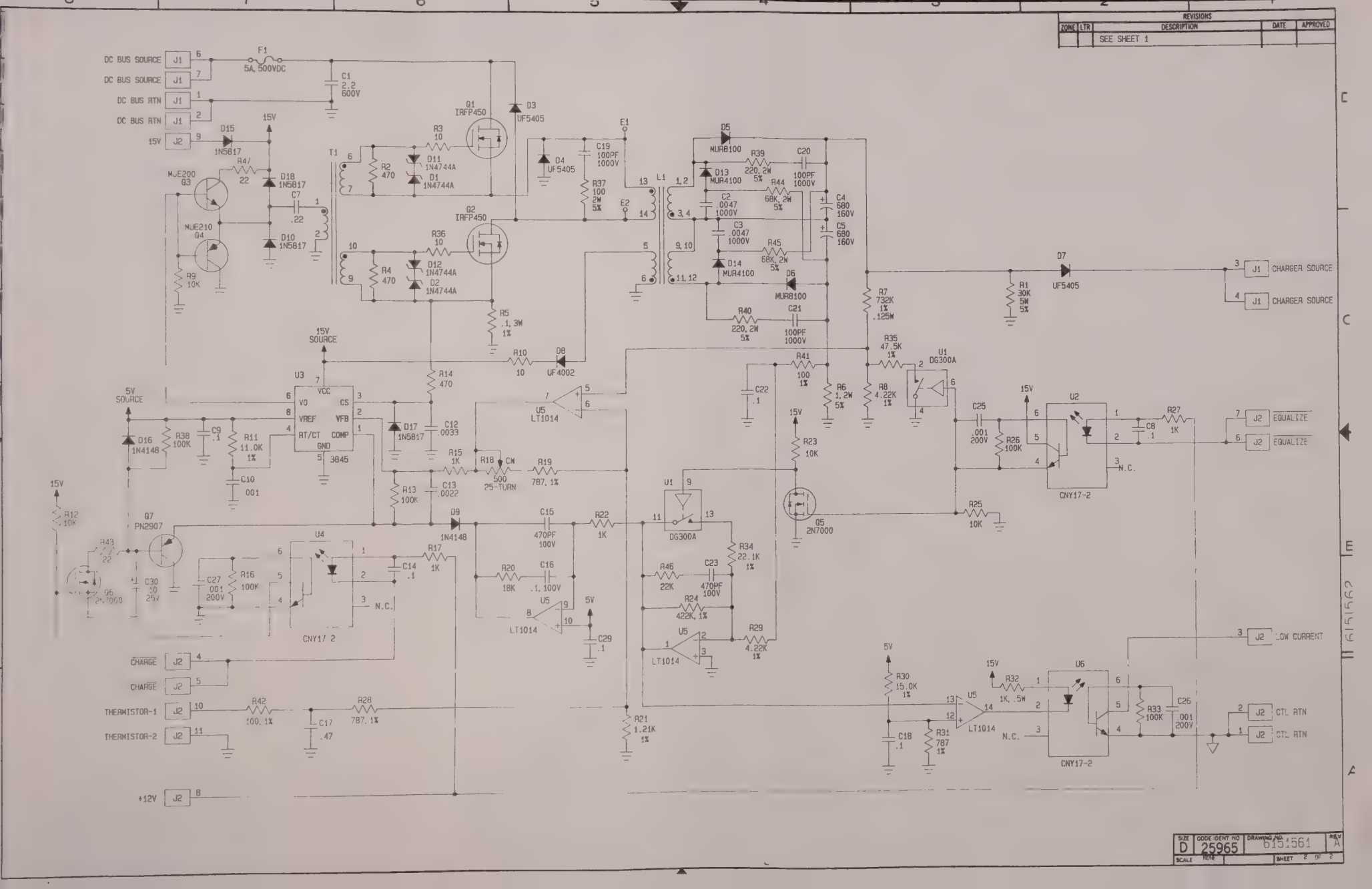
SPARE CONNECTIONS

REFERENCE DESIGNATIONS	
HIGHEST	NOT USED
C30	
D18	
E2	
F1	
J2	
L1	
Q7	
R47	
T1	
U5	

5151561	GUPS2400	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS FRACTIONS ANGLES XX ± 03 ± 1/32 ± 1/2° XXX ± 010 DO NOT SCALE THIS DRAWING	CONTRACT NO	ELGAR
NEXT ASSY	USED ON	MATERIAL	FIRST MADE FOR	SCHEMATIC DIAGRAM, BATTERY CHARGER
APPLICATION		FINISH	APPROVAL / DATE: DRAWN JH 4/21/92; CHECKED 11/6/92; PROJ ENG 7/10/92; QA-REL 920717	SIZE D; CODE IDENT NO 25965; DRAWING NO 6151561; REV A; SCALE NONE; SHEET 1 OF 2

THE INFORMATION DISCLOSED HEREIN WAS ORIGINATED BY AND IS THE PROPERTY OF ELGAR CORPORATION AND EXCEPT FOR RIGHTS EXPRESSLY GRANTED TO THE UNITED STATES GOVERNMENT, ELGAR CORPORATION RESERVES ALL PATENT, PROPRIETARY, DESIGN, USE, SALE, MANUFACTURING AND REPRODUCTION RIGHTS THEREIN

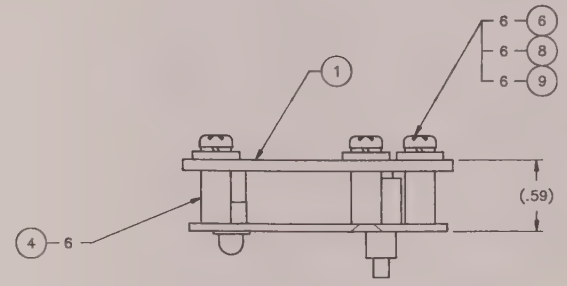
11615562

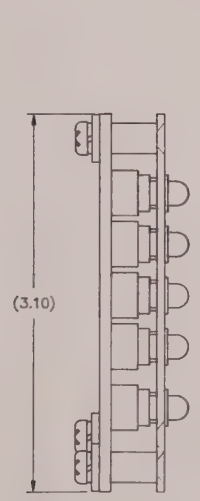

REVISIONS
ZONE LTR DESCRIPTION DATE APPROVED
SEE SHEET 1
DC BUS SOURCE J1 6
DC BUS SOURCE J1 7
DC BUS RTN J1 1
DC BUS RTN J1 2
15V J2 9
F1
5A, 500VDC
C1 2.2 600V
D15 1N5817
R47 22
D18 1N5817
C7 .22
D10 1N5817
MJE200 Q3
MJE210 Q4
R9 10K
Q1 IRFP450
Q2 IRFP450
D3 UF5405
D4 UF5405
T1
R3 10
R2 470
D11 1N4744A
D1 1N4744A
R36 10
R4 470
D12 1N4744A
D2 1N4744A
R5 .1, 3W 1%
C19 100PF 1000V
R37 100 2W 5%
E1
E2
L1
D5 MUR8100
D13 MUR4100
D14 MUR4100
D6 MUR8100
R39 220, 2W 5%
C20 100PF 1000V
R44 68K, 2W 5%
C2 .0047 1000V
C3 .0047 1000V
R45 68K, 2W 5%
C4 680 160V
C5 680 160V
R40 220, 2W 5%
C21 100PF 1000V
D7 UF5405
J1 CHARGER SOURCE
J1 CHARGER SOURCE
R7 732K 1% .125W
R1 30K 5W 5%
R35 47.5K 1%
U1 DG300A
R8 4.22K 1%
R6 1, 2W 5%
R41 100 1%
C22 .1
15V SOURCE
R10 10
D8 UF4002
U3 3845
VCC VO VREF RT/CT CS VFB COMP GND
R14 470
D17 1N5817
C12 .0033
R15 1K
R16 CW 500 25-TURN
R19 787, 1%
C13 .0022
R13 100K
C10 .001
5V SOURCE
D16 1N4148
R38 100K
C9 .1
R11 11.0K 1%
U5 LT1014
15V
R23 10K
Q5 2N7000
R25 10K
U2 CNY17-2
C25 .001 200V
R26 100K
R27 1K
C8 .1
J2 EQUALIZE
J2 EQUALIZE
N.C.
15V
R12 10K
Q7 PN2907
R43 22
Q6 2N7000
C30 .10 25V
U4 CNY17 2
C27 .001 200V
R16 100K
C14 .1
R17 1K
N.C.
D9 1N4148
C15 470PF 100V
R22 1K
R20 18K
C16 .1, 100V
U5 LT1014
5V
C29 .1
U1 DG300A
R34 22.1K 1%
R46 22K
C23 470PF 100V
R24 422K, 1%
U5 LT1014
R29 4.22K 1%
R21 1.21K 1%
5V
R30 15.0K 1%
C18 .1
R31 787 1%
U5 LT1014
15V
R32 1K, .5W
U6 CNY17-2
N.C.
R33 100K
C26 .001 200V
J2 LOW CURRENT
J2 CTL RTN
J2 CTL RTN
CHARGE J2 4
CHARGE J2 5
THERMISTOR-1 J2 10
THERMISTOR-2 J2 11
R42 100, 1%
C17 .47
R28 787, 1%
+12V J2 8
SIZE D
CODE IDENT NO 25965
DRAWING NO 615561
REV A
SCALE NONE
SHEET 2 OF 2
615562

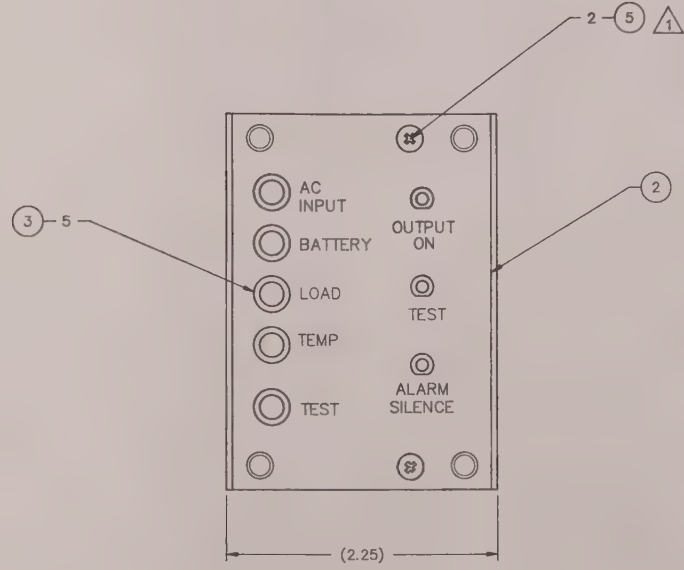
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	INITIAL REL PER DRN R0332	6-3-92	

NOTES: UNLESS OTHERWISE SPECIFIED

1. APPLY ITEM 7 (ADHESIVE) TO SCREWS AT FINAL ASSEMBLY.
2. BAG AND TAG WITH ELGAR PART NUMBER AND LATEST REVISION LEVEL.







-01 ASSY

551592A1

5152000-01	GUPS2400
515[illegible]-01	GUPS 2400
NEXT ASSY	USED ON
APPLICATION	

THE INFORMATION DISCLOSED HEREIN WAS ORIGINATED BY AND IS THE PROPERTY OF ELGAR CORPORATION. EXCEPT FOR RIGHTS EXPRESSLY GRANTED TO THE UNITED STATES GOVERNMENT, ELGAR CORPORATION RESERVES ALL PATENT, PROPRIETARY, DESIGN, USE, SALE, MANUFACTURING AND REPRODUCTION RIGHTS THEREIN.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING
MATERIAL
FINISH

CONTRACT NO		
FIRST MADE FOR		
APPROVAL		DATE
DRAWN	SCHNEIDER	3-24-92
CHECKED	[illegible]	5-28-92
PROJ ENG	[illegible]	6/1/92
QA REL	[illegible]	[illegible]

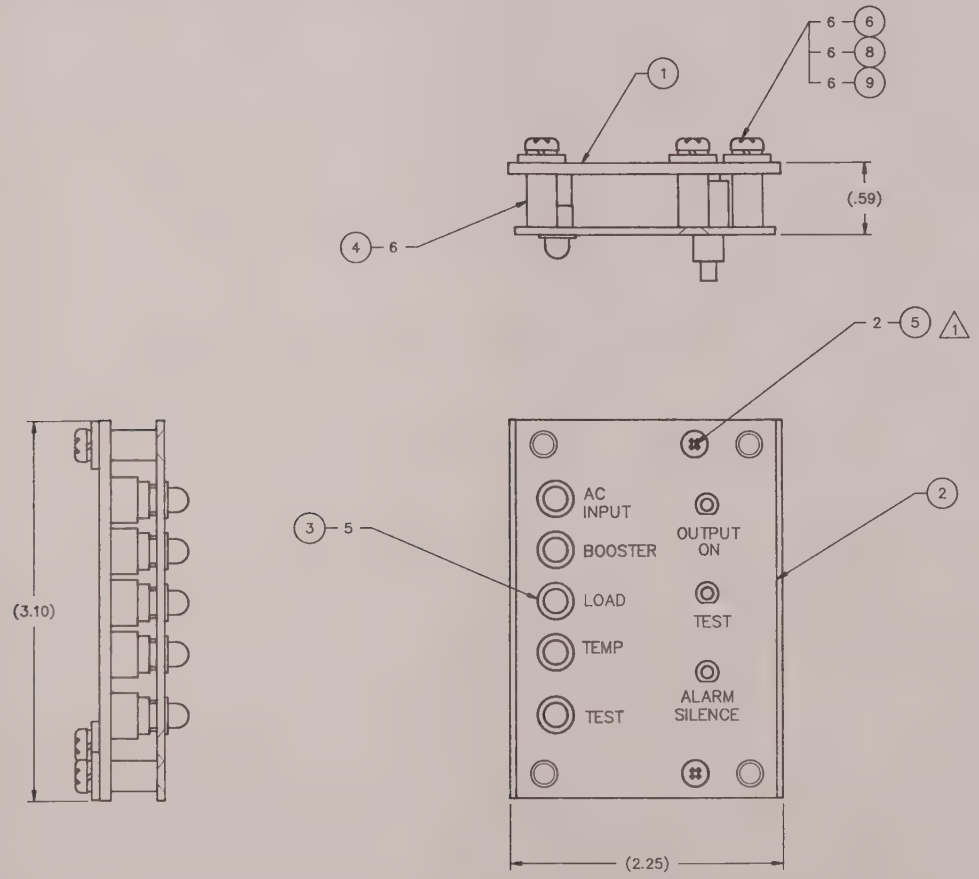
ELGAR

DISPLAY PANEL ASSY
CHASSIS ASSEMBLY

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151592	A

SCALE 2/1 SHEET 1 of 2

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



-02 ASSY

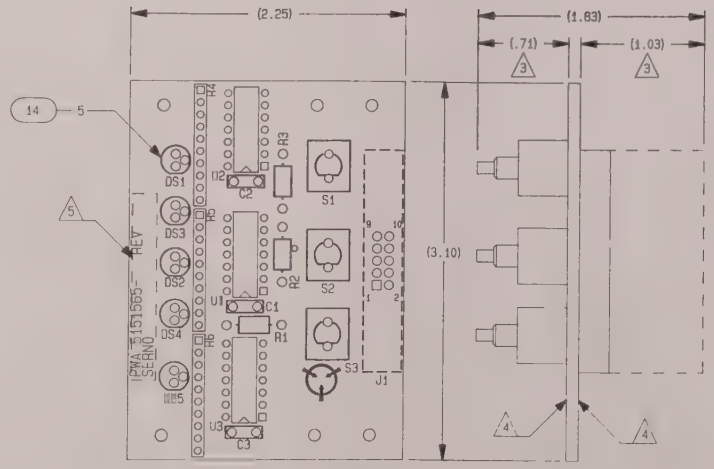
551592A1

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151592	L
SCALE 2/1		SHEET 2 of 2	

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.
2. THIS DRAWING USED IN CONJUNCTION WITH SCHEMATIC DIAGRAM 6151565.
3. MAXIMUM COMPONENT HEIGHT.
4. LEAD TIP PROTRUSION .06 (BOTH SIDES).
5. PERMANENTLY IDENTIFY PART NUMBER, REVISION LETTER AND SERIAL NUMBER IN .12 HIGH CHARACTERS USING RUBBER STAMP, STENCIL OR HAND LETTER. LOCATE APPROXIMATELY AS SHOWN.
6. CONFORMAL COAT TESTED PWA USING ITEM 300. MASK MATING AND ENGAGING SURFACES OF CONNECTORS, TERMINALS, MOUNTING HARDWARE AND AREAS INDICATED.
7. ABBREVIATIONS IN ACCORDANCE WITH MIL-STD-12.
8. ELECTROSTATIC DISCHARGE CONTROL PROGRAM FOR PROTECTION OF ELECTRICAL AND ELECTRONIC PARTS, ASSEMBLIES AND EQUIPMENT PER IP 0460007-01.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE PER DAN A0311	2/19/92	Plant



-01 ASSY

SEE SEPARATE PARTS LIST

CAUTION
SENSITIVE ELECTRONIC DEVICES

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS FRACTIONS ANGLES XX ± .03 ± 1/32 ± 1/2° XXX ± .010 DO NOT SCALE THIS DRAWING	CONTRACT NO	ELGAR	
			FIRST MADE FOR	PRINTED WIRING ASSEMBLY, DISPLAY	
			APPROVAL / DATE: DRAWN JW 4/7/92; CHECKED 4/16/92; PROJ ENG 4/17/92; QA REL		
5151592	MS53	MATERIAL		SIZE D; CODE IDENT NO 25965; DRAWING NO 5151565; REV A	
NEXT ASSY	USED ON			SCALE 2/1; SHEET 1 OF 1	
APPLICATION		FINISH 16			

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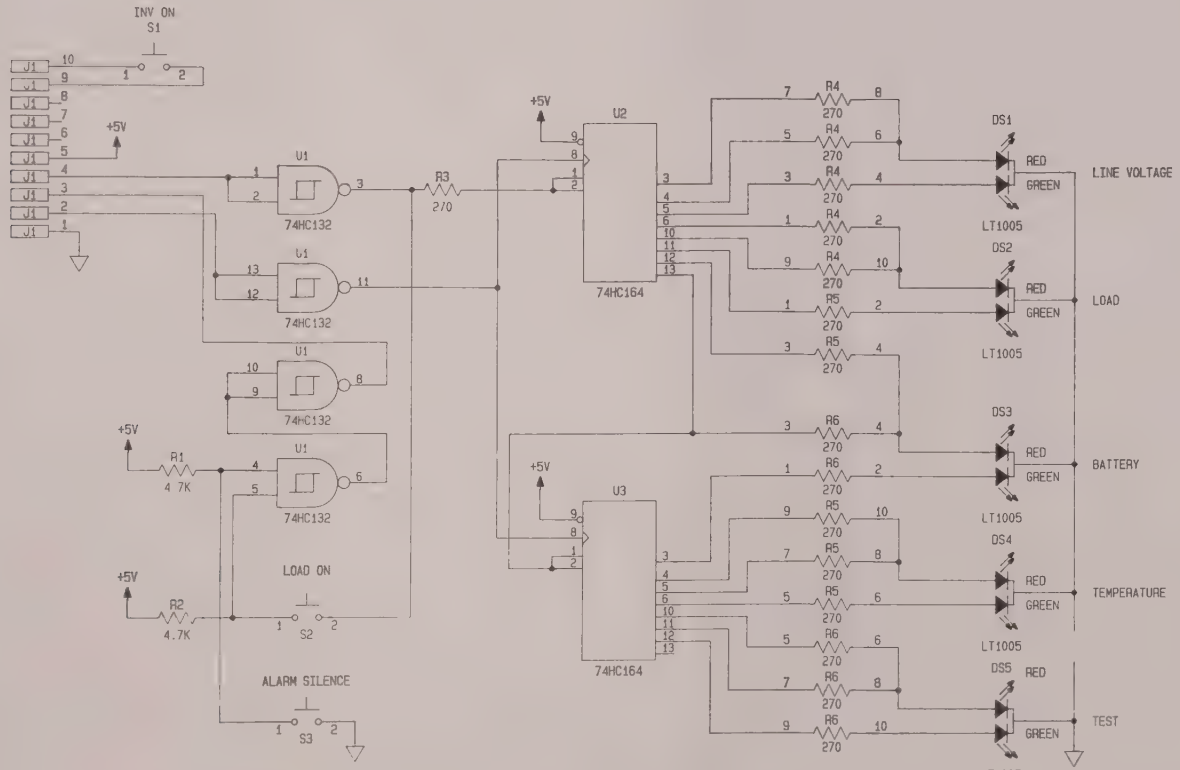
NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IAW DOD-STD-100.
2. ALL RESISTOR VALUES ARE IN OHMS 1/4W, 5%.
2. ALL CAPACITOR VALUES ARE IN MICROFARADS.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE PER DAN R0211	6/19/92	



REFERENCE DESIGNATIONS	
HIGHEST	NOT USED
C3	
DS5	
J1	
R6	
S3	
U3	

SUPPLEMENTAL DATA TABLE				
REF DES	DEVICE TYPE	+5V	GND	
U1	74HC132	PIN 14	PIN 7	
U2, U3	74HC164	PIN 14	PIN 7	

5151565	MSS3	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS FRACTIONS ANGLES XX ± .03 ± 1/32 ± 1/2° XXX ± .010 DO NOT SCALE THIS DRAWING	CONTRACT NO	ELGAR
NEXT ASSY	USED ON	MATERIAL	FIRST MADE FOR	SCHEMATIC DIAGRAM, DISPLAY
APPLICATION		FINISH	APPROVAL / DATE: DRAWN JH 4/14/92; CHECKED 4/16/92; PROJ ENG 5/19/92; QA REL	SIZE D; CODE IDENT NO 25965; DRAWING NO 6151565; REV A; SCALE NONE; SHEET 1 OF 1

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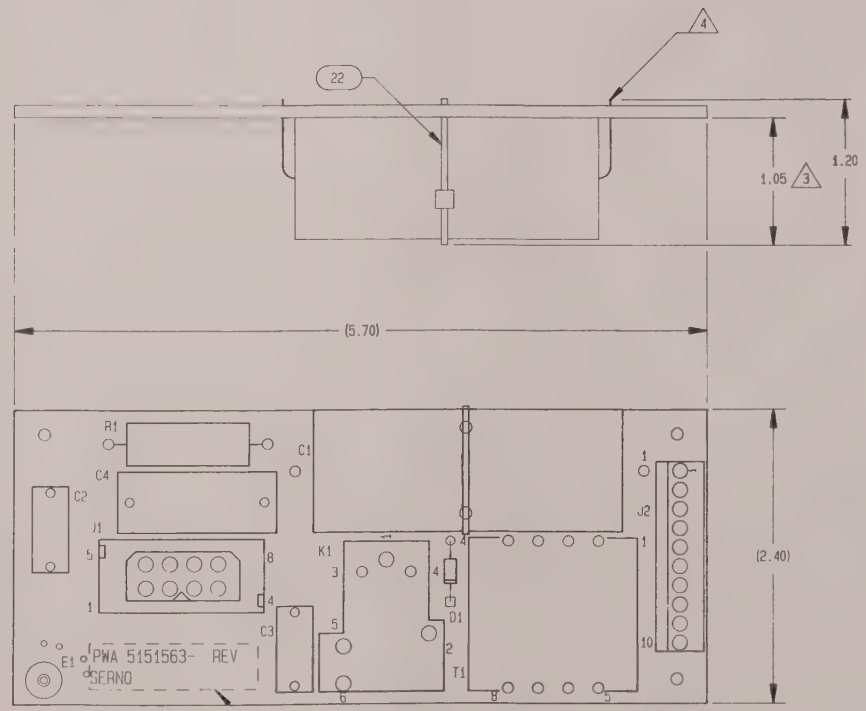
NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD 100.
2. THIS DRAWING USED IN CONJUNCTION WITH SCHEMATIC DIAGRAM 6151563.
3. MAXIMUM COMPONENT HEIGHT.
4. MAXIMUM LEAD TIP PROTRUSION .06 (SOLDER SIDE).
5. PERMANENTLY IDENTIFY PART NUMBER, REVISION LETTER AND SERIAL NUMBER IN .12 HIGH CHARACTERS USING RUBBER STAMP, STENCIL OR HAND LETTER. LOCATE APPROXIMATELY AS SHOWN.
6. CONFORMAL COAT TESTED PWA USING ITEM 300. MASK MATING AND ENGAGING SURFACES OF CONNECTORS, TERMINALS, MOUNTING HARDWARE AND AREAS INDICATED.
7. ABBREVIATIONS IN ACCORDANCE WITH MIL-STD-12.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE PER DRN R0318	5/1/92	



5

SEE SEPARATE PARTS LIST

5152000	GUPS2400
5151500	GUPS2400
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
.XX ± .010
DO NOT SCALE THIS DRAWING
MATERIAL
FINISH 6

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CONTRACT NO		
FIRST MADE FOR		
APPROVAL		DATE
DRAWN	JW	4/08/92
CHECKED		
PROJ ENG		
QA REL		

ELGAR

PRINTED WIRING ASSEMBLY, OUTPUT FILTER

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151563	A

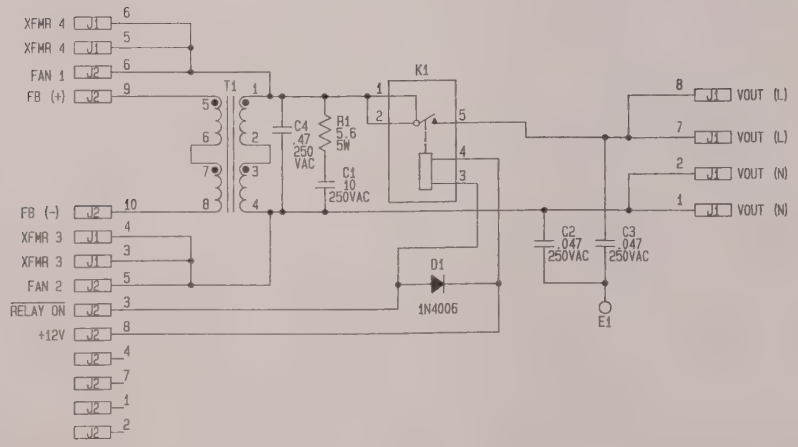
SCALE 2/1 SHEET 1 of 1

5151563 REV A

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE PER DRN A0318	5/20/92	

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IAW DOD-STD-100.
2. ALL CAPACITOR VALUES ARE IN MICROFARADS.
3. ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 5%.



REFERENCE DESIGNATIONS	
HIGHEST	NOT USED
C4	
D1	
E1	
J2	
K1	
R1	
T1	

5151563	GUPS2400
NEXT ASSY	USED ON
APPLICATION	

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING

MATERIAL

FINISH

CONTRACT NO		
FIRST MADE FOR		
APPROVAL		DATE
DRAWN	JH	4/13/92
CHECKED		5/20/92
PROJ ENG		5/20/92
QA REL		5/20/92

ELGAR

SCHEMATIC DIAGRAM, OUTPUT FILTER

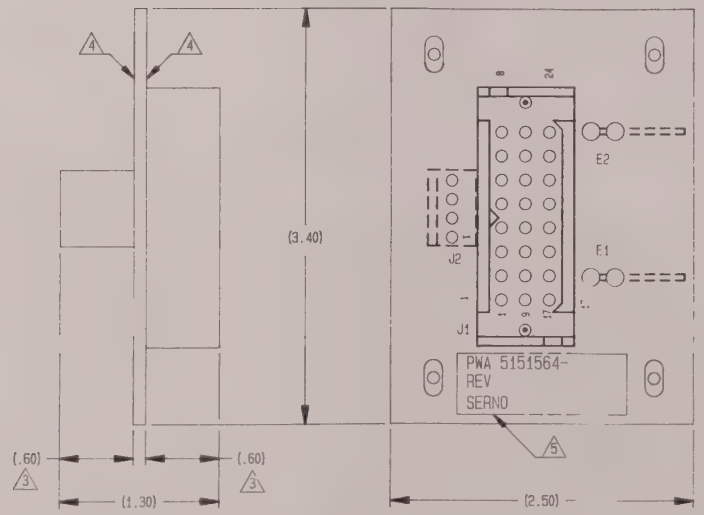
SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	6151563	A

SCALE NONE SHEET 1 OF 1

NOTES UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.
2. THIS DRAWING USED IN CONJUNCTION WITH SCHEMATIC DIAGRAM 6151564.
3. MAXIMUM COMPONENT HEIGHT.
4. MAXIMUM LEAD TIP PROTRUSION .06 (BOTH SIDES).
5. PERMANENTLY IDENTIFY PART NUMBER, REVISION LETTER AND SERIAL NUMBER IN .12 HIGH CHARACTERS USING RUBBER STAMP, STENCIL OR HAND LETTER. LOCATE APPROXIMATELY AS SHOWN.
6. CONFORMAL COAT TESTED PWA USING ITEM 300. MASK MATING AND ENGAGING SURFACES OF CONNECTORS, TERMINALS, MOUNTING HARDWARE AND AREAS INDICATED.
7. ABBREVIATIONS IN ACCORDANCE WITH MIL-STD-12.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE PER DRN A0312	4/30/92	PRESTON
	B	REVISED PER ECN 8375 J. DaSanto	7/8/93	



SEE SEPARATE PARTS LIST

5151500	MSS3
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING

MATERIAL

FINISH 6

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FIRST MADE FOR

APPROVAL		DATE
DRAWN	JM	4/09/92
CHECKED	PRESTON	4/30/92
PROJ ENG	CASEY K.	5/7/92
QA REL	TIM ROTH	920507

ELGAR

PRINTED WIRING ASSEMBLY, BATTERY INTERFACE

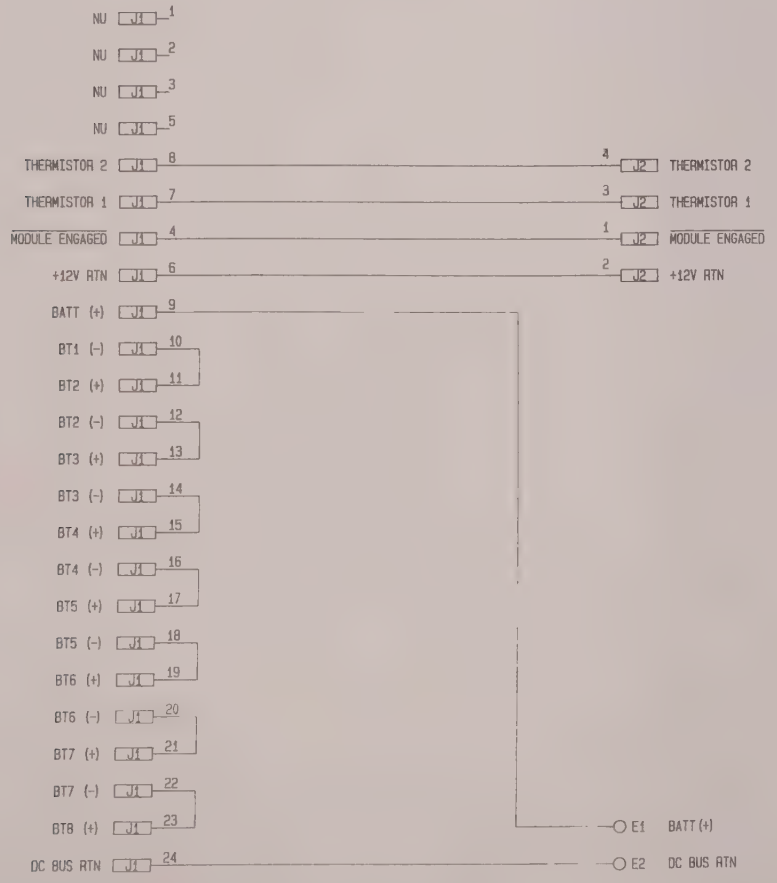
SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151564	P

SCALE 2/1 SHEET 1 OF 1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IAW DOD-STD-100.
2. THIS DRAWING USED IN CONJUNCTION WITH PWA 5151564.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE PER DAN A0312	5/1/92	J. WESTERFIELD
	B	REVISED PER ECN 8330 - D. DeSante	10/6/93	[illegible]



REFERENCE DESIGNATIONS	
HIGHEST	NOT USED
E2	
J2	

5151564	MCAI	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: DECIMALS FRACTIONS ANGLES xx ± .03 ± 1/32 ± 1/2° XXX ± .010 DO NOT SCALE THIS DRAWING	CONTRACT NO
NEXT ASSY	USED ON	MATERIAL	FIRST MADE FOR
APPLICATION		FINISH	APPROVAL / DATE: DRAWN PRESTON 2/4/92; CHECKED J. WESTERFIELD 5/1/92; PROJ ENG CASEY K 5/1/92; QA REL TIM ROTH 920507

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ELGAR

SCHEMATIC DIAGRAM, BATTERY INTERFACE

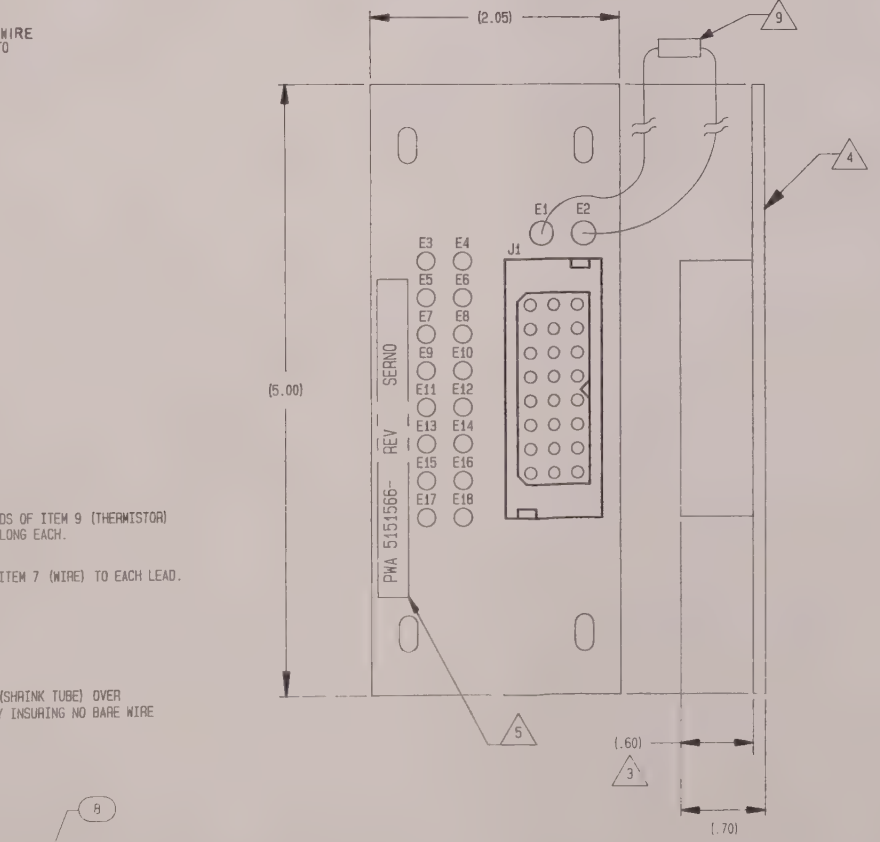
SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	6151564	B

SCALE NONE SHEET 1 OF 1

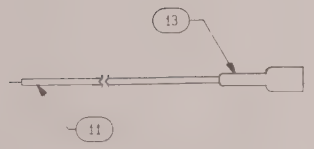
NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.
2. THIS DRAWING USED IN CONJUNCTION WITH SCHEMATIC DIAGRAM 6151566.
3. MAXIMUM COMPONENT HEIGHT.
4. MAXIMUM LEAD TIP PROTRUSION .06 (SOLDER SIDE).
5. PERMANENTLY IDENTIFY PART NUMBER, REVISION LETTER AND SERIAL NUMBER IN .12 HIGH CHARACTERS USING RUBBER STAMP, STENCIL OR HAND LETTER. LOCATE APPROXIMATELY AS SHOWN.
6. CONFORMAL COAT TESTED PWA USING ITEM 300. MASK MATING AND ENGAGING SURFACES OF CONNECTORS, TERMINALS, MOUNTING HARDWARE AND AREAS INDICATED.
7. ABBREVIATIONS IN ACCORDANCE WITH MIL-STD-12.
8. CUT AND PERMANENTLY LABEL ITEM 11 (14 GAUGE WIRE) WITH WIRE NUMBERS AS SHOWN IN WIRING TABLE. CRIMP ITEM 13 (LUG) TO WIRES AS SHOWN IN DETAIL C.
9. ASSEMBLE WIRE AND THERMISTOR AS SHOWN IN DETAIL A AND DETAIL B.

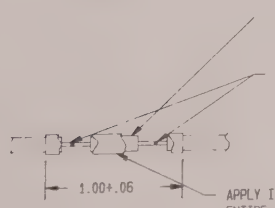
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE IAW DAN R0321 G.L. 5-11-92	5/12/92	



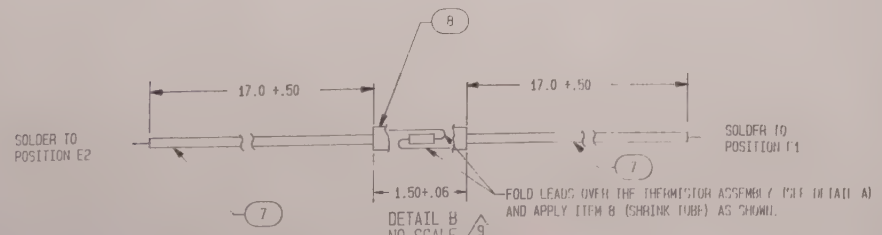
WIRING TABLE 8		
WIRE #	WIRE LENGTH	DESTINATION
W1	7.00 INCH	E17
W2	7.00 INCH	E15
W3	7.00 INCH	E13
W4	4.00 INCH	E11
W5	18.00 INCH	E9
W6	18.00 INCH	E7
W7	19.00 INCH	E5
W8	15.50 INCH	E3
W9	9.50 INCH	E18
W10	10.00 INCH	E16
W11	10.00 INCH	E14
W12	9.00 INCH	E12
W13	18.00 INCH	E10
W14	18.00 INCH	E8
W15	19.00 INCH	E6
W16	15.50 INCH	E4



DETAIL C
NO SCALE 8


CUT LEADS OF ITEM 9 (THERMISTOR) TO .25 LONG EACH.
SOLDER ITEM 7 (WIRE) TO EACH LEAD.
1.00+.06
APPLY ITEM 10 (SHRINK TUBE) OVER ENTIRE ASSEMBLY INSURING NO BARE WIRE IS EXPOSED.

DETAIL A
NO SCALE 9



DETAIL B
NO SCALE 9

SEE SEPARATE PARTS LIST

5151502	DWG#2400		
NEXT ASSY	USED ON		
APPLICATION			

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TOLERANCES ON
DECIMALS FRACTIONS ANGLES
XX ± .03 ± 1/32 ± 1/2°
XXX ± .010
DO NOT SCALE THIS DRAWING

MATERIAL

FINISH 6

CONTRACT NO		
FIRST MADE FOR		
APPROVAL		DATE
DRAWN	G.L.	5-11-92
CHECKED		
PROJ ENG		
QA REL		

ELGAR

PRINTED WIRING ASSY
BATTERY CONNECTOR

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151566	-

SCALE 2/1 SHEET 1 OF 1

5151566

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IAW DOD-STD-100.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
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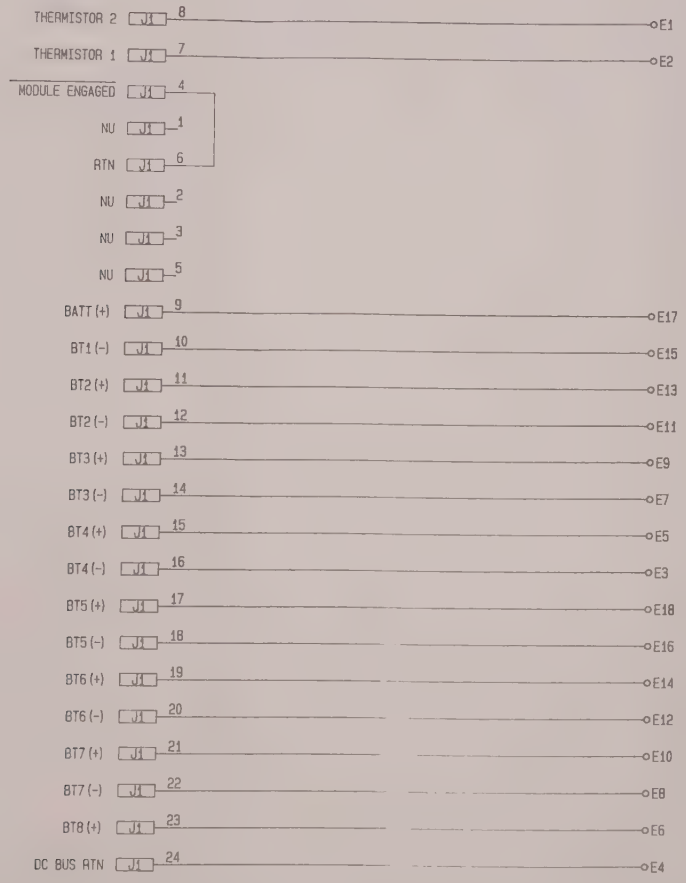
THERMISTOR 2 J1 8 E1
THERMISTOR 1 J1 7 E2
MODULE ENGAGED J1 4
NU J1 1
RTN J1 6
NU J1 2
NU J1 3
NU J1 5
BATT (+) J1 9 E17
BT1 (-) J1 10 E15
BT2 (+) J1 11 E13
BT2 (-) J1 12 E11
BT3 (+) J1 13 E9
BT3 (-) J1 14 E7
BT4 (+) J1 15 E5
BT4 (-) J1 16 E3
BT5 (+) J1 17 E18
BT5 (-) J1 18 E16
BT6 (+) J1 19 E14
BT6 (-) J1 20 E12
BT7 (+) J1 21 E10
BT7 (-) J1 22 E8
BT8 (+) J1 23 E6
DC BUS RTN J1 24 E4

REFERENCE DESIGNATIONS	
HIGHEST	NOT USED
E18	
J1	

5151566	GUPS2400
NEXT ASSY	USED ON
APPLICATION	

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS: XX ± .03, XXX ± .010 | FRACTIONS: ± 1/32 | ANGLES: ± 1/2°
DO NOT SCALE THIS DRAWING

MATERIAL

FINISH

CONTRACT NO		
FIRST MADE FOR		
APPROVAL		DATE
DRAWN	G LOPEZ	5-11-92
CHECKED	P.A	5/14/92
PROJ ENG	[illegible]	5/20/92
QA REL	[illegible]	[illegible]

ELGAR

SCHEMATIC DIAGRAM, BATTERY CONNECTOR

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	6151566	A

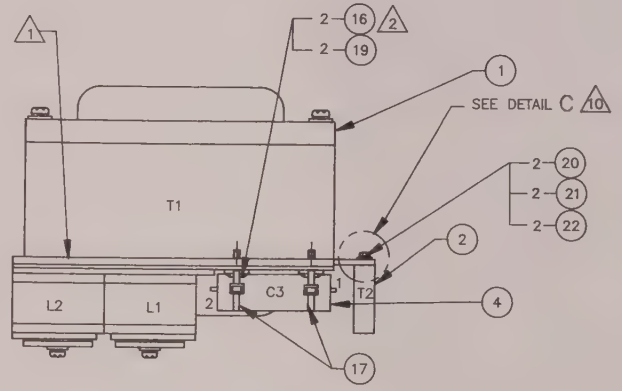
SCALE NONE | SHEET 1 OF 1

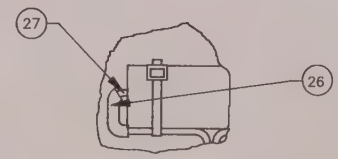
6151566

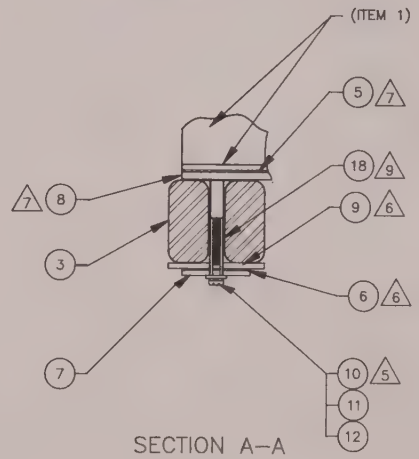
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PROD REL PER DRN R0410	10-26-92	CASEY K
	B	REVISED PER ECN 8512 DMR	5/10/93	
	C	REVISED PER ECN 8556 DMR	6/18/93	
	D	REVISED PER ECN 8614 PQS	7/2/93	

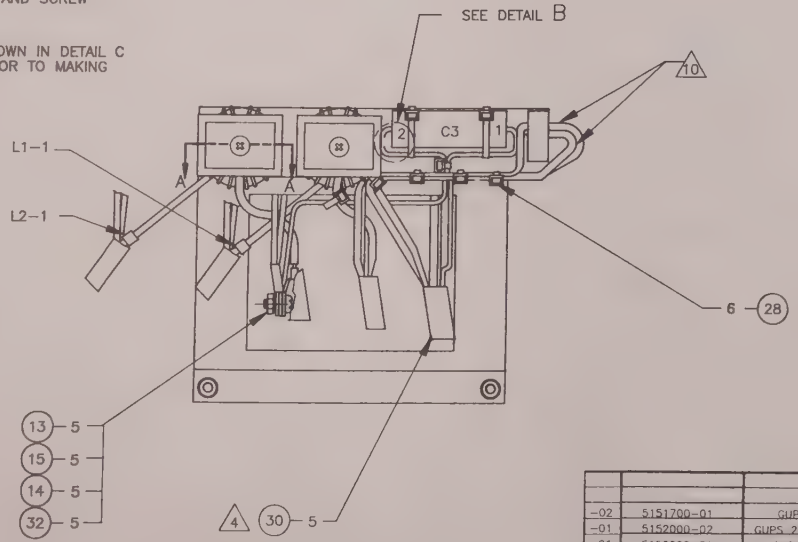
NOTES:

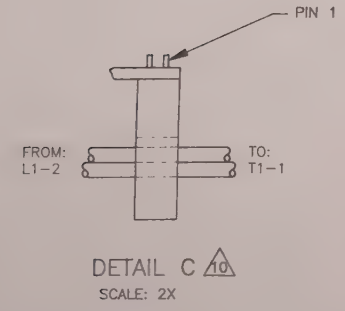
1. IDENTIFY WITH ELGAR PART NO. AND REVISION LETTER LOCATE APPROXIMATELY AS SHOWN.
2. APPLY THREAD ADHESIVE (ITEM 23) TO FASTENERS AT ASSEMBLY.
3. WIRE ASSEMBLY PER WIRE LIST (ITEM 29) AND WIRE KIT (ITEM 25). ALSO SEE NOTE 10.
4. COVER LEAD CONNECTIONS WITH 1.75 ± .12 INCHES (ITEM 30) TUBING.
5. TORQUE SCREWS 8.0 ±.5 IN/LBS. (ITEMS 8 AND 9 WILL COMPRESS).
6. REMOVE ADHESIVE BACKING FROM FOAM INSULATOR (ITEM 9) AND ADHERE TO CLAMP INSULATOR (ITEM 6) PRIOR TO ASSEMBLY.
7. REMOVE ADHESIVE BACKING FROM FOAM INSULATOR (ITEM 8) AND ADHERE TO BRACKET INSULATOR (ITEM 5) AT ASSEMBLY.
8. COVER CAPACITOR LEADS WITH .50±12 INCHES OF SLEEVING (ITEM 27). SOLDER WIRE PER WIRE KIT (ITEM 25) AND WIRE LIST (ITEM 29) TO LEAD AND COVER WITH .75 ±.12 INCHES OF SHRINK TUBING (ITEM 26).
9. CUT 2 PIECES OF TUBING (ITEM 18) 1.63±.030 LONG. CUT 2 PIECES OF TUBING (ITEM 24) 1.63±.030 LONG. INSERT ITEM 18 PIECES INTO ITEM 24 PIECES SO THAT ENDS ARE FLUSH. SLIP OVER STAND-OFFS AND ASSEMBLE ITEMS 8,5,3,6,7,9,10,11 AND 12 AS SHOWN. ENSURE COMPLETE INSULATION OF STAND-OFF AND SCREW FROM TORROID.
10. ROUTE WIRES THRU T2 HOLE IN DIRECTION SHOWN IN DETAIL C AND CRIMP RING LUG (ITEM 31) TO WIRES PRIOR TO MAKING L1-2 CONNECTION. SEE WIRE LIST (ITEM 29).











-01 ASSY
-02 ASSY

551626D1

DASH USED	NEXT ASSY	USED ON
-02	5151700-01	GUPS 2400U
-01	5152000-02	GUPS 2400AD-101
-01	5152000-01	GUPS 2400AD
-01	5151500-01	GUPS 2400A

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES .XX ± .03 .XXX ± .010 DECIMALS FRACTIONS ± 1/32 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL
FINISH

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CONTRACT NO
FIRST MADE FOR

APPROVAL		DATE
DRAWN	L. ROYS	10-16-92
CHECKED	SCHNEIDER	10-19-92
PROJ ENG	CASEY K	10-26-92
QA REL	SWANK	10-26-92

ELGAR

OUTPUT XFMR
FINAL ASSY

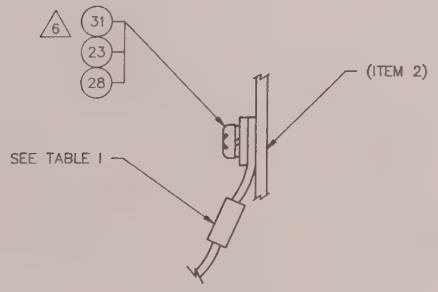
SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	5151626	D

SCALE 1 : 1 SHEET 1 OF 1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PROD REL PER DRN R0404	10-3-92	LAM
	B	REVISED PER ECN 8532 DMR	2/17/93	
	C	REVISED PER ECN 8549/A DMR	5/17/93	

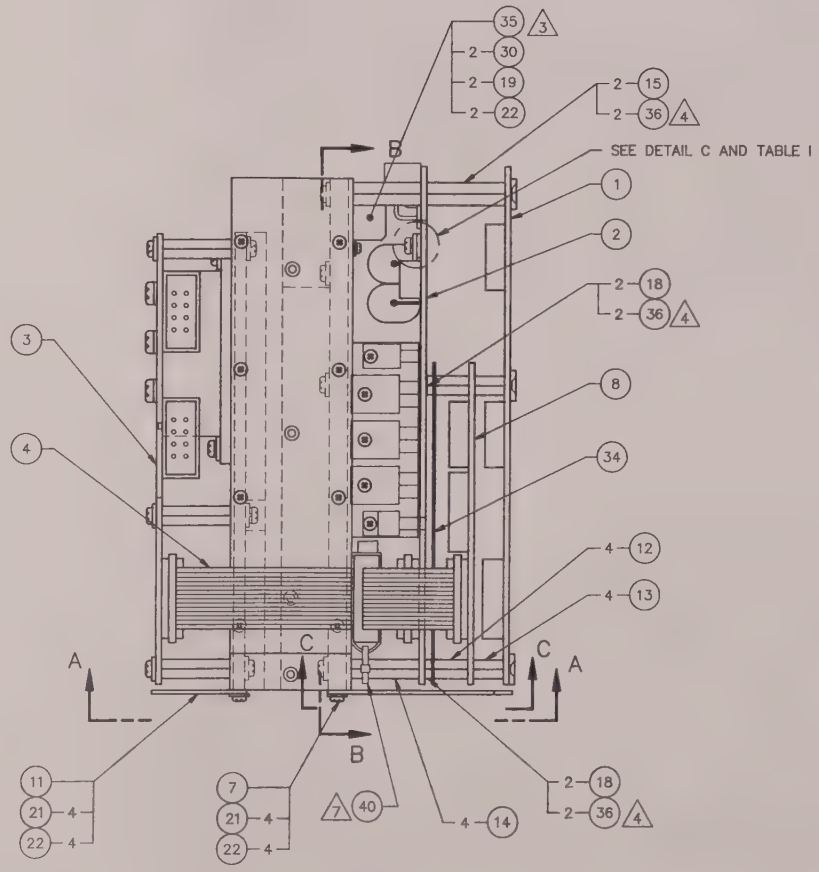
NOTES: (UNLESS OTHERWISE SPECIFIED)

1. BAG AND TAG WITH ELGAR PN AND LATEST REVISION LETTER.
2. APPLY THREAD ADHESIVE (ITEM 33) TO ALL FASTENERS AT FINAL ASSEMBLY.
3. APPLY THERMO-COMPOUND (ITEM 32) TO THE COMPONENTS OF PRINTED CIRCUIT BOARDS BEING MOUNTED TO HEATSINK.
4. PLACE FIBER WASHER (ITEM 36) NEXT TO PWA (ITEM 2).
5. COVER SOLDER CONNECTIONS WITH HEAT SHRINK (ITEM 37).
6. DO NOT APPLY THREAD ADHESIVE (ITEM 33).
7. SECURE CABLE (ITEM 4) USING CABLE TIE (ITEM 40) BY SLIPPING THRU CABLE TIE ON CABLE ASSY AND AROUND HEX STAND-OFF (ITEM 14).

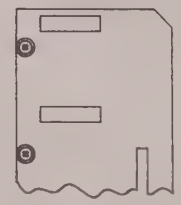


DETAIL C

SCALE: 2X
2 PLACES



-01 ASSY



VIEW C-C
BAFFLE SLOT
LOCATED ON TOP

TABLE I						
ITEM NO.	AWG	WIRE LENGTH	ORIGIN	TERM	DESTINATION	TERM
39	14	3.0 INCHES	R58-1 (5)	SOLDER	E1	38
39	14	3.0 INCHES	R58-2 (5)	SOLDER	E2	38

551537C1

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS FRACTIONS ANGLES XX ± .03 ± 1/32 ± 1/2° XXX ± .010 DO NOT SCALE THIS DRAWING	CONTRACT NO	ELGAR	
			FIRST MADE FOR	HEATSINK ASSEMBLY CHASSIS ASSY	
			APPROVAL / DATE		
			DRAWN SCHNEIDER 920318		
			CHECKED SCHNEIDER 10-2-92		
			PROJ ENG LAM 10-3-92		
			QA-REL Q. LE 10-13-92		
5151500-01	GUPS 2400	MATERIAL		SIZE D / CODE IDENT NO 25965 / DRAWING NO 5151537 / REV C	
NEXT ASSY	USED ON			SCALE 1/1	SHEET 1 OF 2
APPLICATION					
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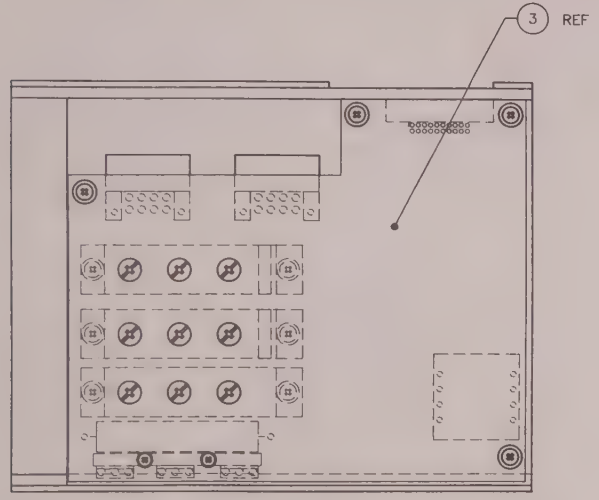
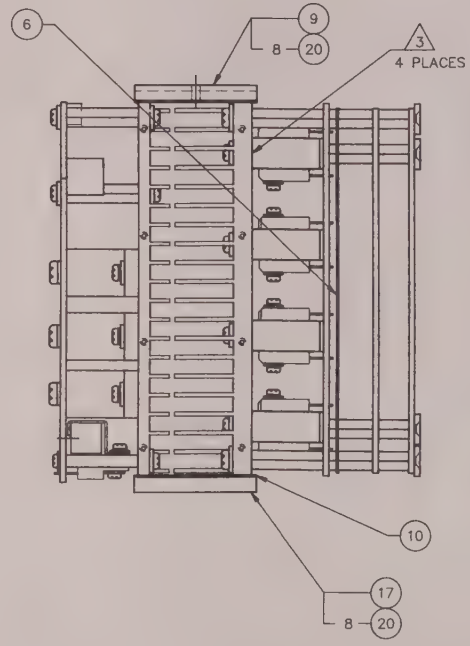
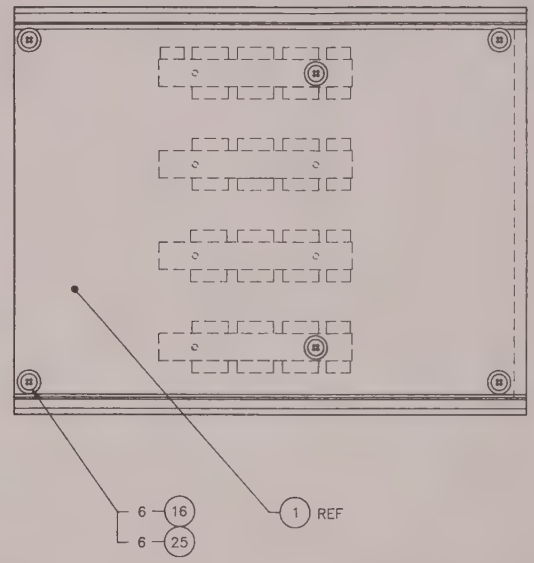
5151537

8 7 6 5 4 3 2 1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

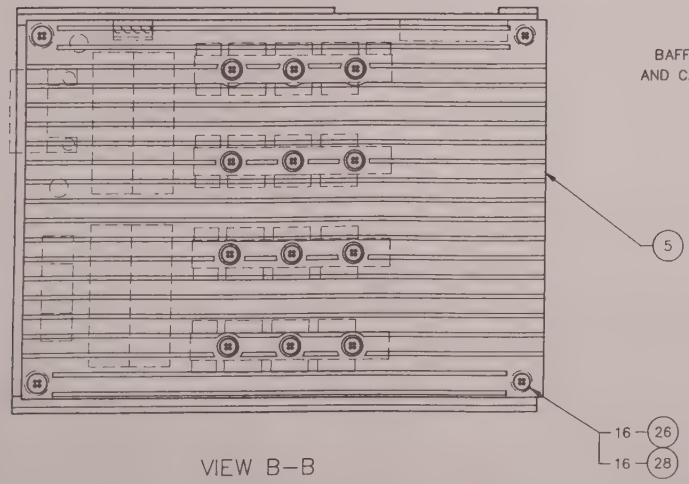






VIEW A–A

BAFFLES (ITEMS 7 AND 11) WITH HARDWARE, AND CABLE (ITEM 4) NOT SHOWN FOR CLARITY



VIEW B–B

551537C2

SIZE	CODE IDENT NO	DRAWING NO	REV
D	25965	551537	C
SCALE 1/1		SHEET 2 OF 2	

4.1 GENERAL

This section contains the schematic diagrams and parts layout diagrams for the GUPS 2400A. The schematic diagrams should be used to understand the theory of operation and as an aid in troubleshooting the unit.

4.2 SCHEMATICS AND ASSEMBLY DRAWINGS

Table 4–1 provides a list of the schematics and assembly drawings included in this section.

Table 4–1. GUPS 2400A Diagram Listing

Number	Title
5151501	Final Assembly
5151500	Chassis Assembly
5151559	Rectifier Board PWA
6151559	Rectifier Board Schematic
5151562	Control PWA
6151562	Control Schematic
5151560	Inverter Power PWA
6151560	Inverter Power Schematic
5151586	Processor Board PWA
6151586	Processor Board Schematic
5151502	Battery Module Assembly
5151561	Battery Charger PWA
6151561	Battery Charger Schematic
5151592	Display Plate Assembly
5151565	Display PWA
6151565	Display Schematic
5151563	Output Filter PWA
6151563	Output Filter Schematic
5151564	Battery Interface PWA
6151564	Battery Interface Schematic

Number	Title
5151566	Battery Connector PWA
6151566	Battery Connector Schematic
5151626	Output Transformer Assembly
5151537	Heatsink Assembly

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